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SOME RELATIONS OF THE NERVOUS MECHANISM OF THE HEART TO DRUG EFFECTS, AS INDICATED BY EXPERIMENTS ON THE TERRAPIN *

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Clinical observation of a sudden death following the intravenous use of strophanthin, as well as the very prompt therapeutic effects noted in favorable cases from minute doses of it and of camphor, seem to me to indicate that the primary effect of these drugs on the heart must be on some highly sensitive governing mechanism of a nervous character rather than on the cardiac muscle itself. The carefully balanced chemical and mechanical relations between the blood and the blood-vessel wall hold for the endocardium as well, and they must depend on and affect, to some extent at least, the nervous supply to that portion of the lining coming in most direct contact with the blood. Consequently, it is possible for chemical substances in the blood to exert a direct effect on nerve-endings of the endocardium, and there is some reason to suppose that this might be, because of the amount of surface exposed, the susceptibility of sensory nerve endings, and the fact that in intravenous infusions a considerable concentration of the injected solution is temporarily possible, the first effect to be obtained. It is interesting to note in this connection that Zunz[1] has found that terrapin hearts protected by their own blood resisted poisons, particularly those supposed to affect muscle, better than when Locke's or other solutions were perfused. Obviously, in the human body the diffusion of an administered drug may be so prompt that it is impossible to know whether its cardiac effects come primarily or secondarily from the central nervous system, the cardiac nervous mechanism, or are directly from the muscle itself. The very rich nerve-end supply of the endocardium and the pericardium has intimate connections with the intricate network of nerve fibers and ganglion cells now known to exist practically throughout the heart. This is particularly significant, since the work of Tawara, Aschoff, Wilson, Engel and others on the presence of nervous elements in the bundle of His. The frequent cardiac irregularities noted in pathologic conditions of the pericardium and the endocardium may be due to inflammatory processes along the conducting bundles, as has been described by Gerhardt,[2] but in some cases at least there is ground for the assumption that the irregularities are due to abnormal reflexes arising from the diseased serous membranes. Anyone who has carefully watched the clinical course of an adherent or obliterative pericarditis, without evident lesion of the valves or muscle discoverable at autopsy, must have been impressed by the fact that the mechanical element alone imperfectly explains the disturbances of cardiac action noted. It is impossible with our present knowledge of muscle physiology and pathology, particularly of the so-called "primitive muscle" of the bundle of His, to know how much of a part muscle and nerve respectively play in all of the phenomena associated with the heart-beat. As Gibson[3] has indicated, the clinical features of cardiac disease are better explained on the neurogenic theory of the origin and conduction of the rhythmic contractions of heart than on the myogenic. Particularly is this true in the transient irregularities noted in neurasthenia and certain diseases of the kidney and in explaining the effects of certain drugs.

The series of experiments on which this paper is based were begun with the idea of ascertaining whether the endocardium and pericardium could play a considerable part in drug action on the heart and whether by the use of drugs any more light could be thrown on the relative importance of the nervous and muscular elements in conduction within the heart. It was thought that drugs with certain well-known properties might by action, antagonistic or direct, better serve to distinguish muscular from nervous effects than anatomic severance, where the muscle and ever-accompanying nervous tissue are alike interfered with. The possible importance of the serous membranes of the heart as seats of primary drug action has been shoved into the background, largely because of the difficulty of directly proving the part played by them and because of more evident effects elsewhere. But when one considers the local effects on sensory nerve-endings of dilute solutions of some of the drugs used in cardiac therapeusis, particularly strophanthin and camphor, and remembers that these endings in the endocardium and pericardium are intimately connected with the whole intracardiac and extracardiac nervous mechanism, one sees the possibility of some of the striking and prompt results following their use being due to direct stimulation of them. Hatcher[4] states that strophanthin G acts almost instantly intravenously on

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* Owing to lack of space, portions of the article are omitted from THE JOURNAL. The complete article, however, appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author or by THE JOURNAL on receipt of a stamped, directed envelope.

1. Zunz, E.: De l'empoisonnement du cœur protégé et non protégé, Ann. de la Soc. roy d. sc. méd. et nat. de Brux., quoted in Schmidt's Jahrb., 1911, ccclx, 113.

2. Gerhardt, D.: Ueber Rückbildung des Adams-Stokesschen Symptom-Complex, Arch. f. klin. Med., 1908, xciii, Nos. 5-6.

3. Gibson, G.: Cause of the Heart-Beat, Edinburgh Med. Jour., 1907, Sec. ii-xxii, 7.

4. Hatcher, A.: Clinical Use of Strophanthus, THE JOURNAL A. M. A., Nov. 12, 1910, p. 1697; Absorption, Excretion and Destruction of Strophanthin, Am. Jour. Physiol., 1908-09, xxiii, 393.

the cat's heart, that it is one hundred times as toxic administered by the vein as by the mouth, and that it is among the most irritating substances used therapeutically, not even excepting veratrin. Fraser and Mackenzie,[5] in their study of an African arrow poison containing strophanthus, found that it increased at first the sensitiveness of a frog's foot to acid with subsequent anesthesia and that it caused fibrillary twitchings of non-curarized skeletal muscles. The irritating effects of it when applied to the conjunctival sac with the subsequent paralysis of sensory nerve-endings is well known. The uncertainty expressed by many authors, as to whether the endocardium and pericardium possessed sensory nerve-endings, has interfered in the study of cardiac therapeusis, with a due proportion of consideration for these membranes. The improvement in method of preparation has demonstrated clearly the wide and intricate distribution of nervous elements throughout the heart.

of the pericardial sac, except near openings of the vessels, had no marked effects. Applications of tincture of iodin to the epicardium often permitted tracings to be obtained closely resembling those following strongly toxic doses of digitalis bodies. From the tip of the apex to the sinus venosus increasing susceptibility to irritants was noted. At first it was thought that the vagus fibers were being stimulated, but comparable results were obtained after the use of atropin. The local use of cocain and beta-eucain delayed and modified the effects produced, inhibiting particularly the frequent primary stimulation of the heart, but did not prevent the slowing and weakening of the heart-beat which was probably largely due to the toxic effect on the muscle, although hearts quiescent after such irritation often responded vigorously to mechanical stimulation. The most characteristic result is illustrated in Experiment VII (Fig. 1), in which, after the application of tincture of iodin to the sinus venosus of a suspended terrapin heart, an

Fig. 1.—Experiment VII. Application of tincture of iodin to suspended terrapin heart. Tracing reads from right to left and below upward. A, tincture of iodin applied to the inner surface of the pericardial sac; B, tincture of iodin applied to the apex, C, applied to sinus and auricle; D, applied to whole surface; E, second application of tincture of iodin to whole surface.

Fig. 2.—Experiment XXIV. Toxic effect of strophanthin (amor.) on suspended heart. Lowest line, time in quarter minutes. A, 15 minims of 0.1 per cent. strophanthin (amor.) injected intravenously.

EXPERIMENTS

With these observations in mind, a series of experiments on the frog and western terrapin (*Clemmys marmorata*) was performed by applying to various parts of the internal and external surface of the heart *in situ* and isolated, as a whole, and in sections, tincture of iodin, silver nitrate (crystals and solutions), cantharides, strophanthin (amorphous and crystalline) pure and in solution, and various preparations of digitalis. Records were usually taken by the ordinary suspension methods. The results were variable and depended largely on the condition of the animals, the strength of the solutions and the amount and location of the surface involved. In general, except in one experiment in which a cantharides plaster caused an increase in the rate and force of the beat, irritating applications to the inner surface

alternating rhythm was obtained, followed by infrequent and strong ventricular systoles which gradually grew weaker and slower. A second application produced a prompt but brief increase in ventricular rate in spite of the gradual decrease in the force of the contractions. It is interesting to compare this tracing with one showing the rapidly toxic effect of large doses of strophanthin given intravenously. Here we see (Exp. XXIV, Fig. 2) the same primary stimulation followed by a brief period of alternating strong and weak systoles, then irregularity followed by increased force of contractions at a slower rate, then lessened force with the heart stopping in strong systole. If weaker solutions are used, similar effects with cessation of the beats in the diastolic phase are the result. Apparently the same mechanism within the heart is affected by these two strongly toxic substances even when applied differently. Evidently, a sinus or auricle block is often obtained, and

5. Fraser and MacKenzie: Strophan. sarmentosum, Tr. Roy. Soc., Edinburgh, 1909-10, xlvii, 341.

at times with external applications of irritants near the auriculoventricular junction the ventricle rate is increased and that of the auricles lowered. When the whole heart is covered with an irritant, the ventricle beats continue longest, probably because its thick walls offer greater resistance to the penetration of the poison. Isolated ventricle strips contracted when painted either on the pericardial or endocardial side with tincture of iodin, but speedily ceased to contract spontaneously after such application. Strophanthus tincture and strophanthin solutions of various strengths, injected into the pericardial sac, were found to have the usual effects obtained from digitalis bodies so applied. Strophanthin G crystals, applied to the endocardial or pericardial surface of suspended ventricular strips, caused the usual temporary increase in rate and force of beat followed by decreased force and rhythm with gradual death of the strip. It is particularly significant to find that external applications of irritants, particularly about the sinus, modify heart action in about the way that digitalis does, probably in part because they act directly on the force of systole, slowing of the rhythm, etc., attempts were made to modify these effects by the use of such drugs as atropin, cocain, beta-eucain and strychnin to see if it could be ascertained whether nervous or muscular tissues were primarily affected by strophanthin, and also whether the normal conduction of the cardiac rhythm was through nervous or muscular elements. Records were made after the intravenous and direct application of crystals and solutions of strophanthin G to the terrapin and the frog heart, in animals with and without an intact central nervous system and before and after the use of the drugs mentioned. Various isolated preparations of the heart, ventricle strips, portions of ventricle and auricle, ventricle and bulbus arteriosus, auricle and sinus venosus, sinus venosus and the larger veins were also tested.

Space permits only the details of a few typical experiments to be given, but they will illustrate the general results obtained.

EXPERIMENT XXIII.—Sluggish terrapin in poor condition. Ventricle suspended by frenum and 0.5 c.c. of a 0.1 per cent.

Fig. 3.—Experiment XXIII. Strophanthin (amor.) followed by strychnin, resulting in disappearance of sustained tonus of "cardiac tetanus." A, strophanthin injected intravenously; B, strychnin injected intravenously.

Fig. 4.—Experiment XXXI. Suspended terrapin ventricle; strychnin injections after atropin, beta-eucain and strophanthin: A, strychnin injected into auricle; B, strychnin injected into ventricle; C, mechanical stimulation.

muscular (and nervous) tissue shown by Gaskell[19] as necessarily present to connect the different portions of the tortoise heart.

Assuming from the literature and these experiments that it was possible that some of the effects of such drugs as strophanthin on the heart could be ascribed to irritation of the nerve-endings of the endocardium, and that there was also a direct and possibly an indirect influence on the conducting tissue between the different portions of the heart, it seemed more likely that nervous tissue rather than muscular was the essential element involved, so a series of experiments was undertaken to test the effect of strophanthin on the various portions of the terrapin heart, isolated and intact. After finding what doses would readily produce the typical effect of alternating beats, auriculoventricular block, increased solution of amorphous strophanthin injected intravenously. In two minutes the ventricle went into short periods of the so-called "cardiac tetanus" or "state of sustained tonus," which continued until 0.35 c.c. of a saturated strychnin solution in normal saline were given. After a short stage of irregularity the heart began to beat regularly at about one-half of the usual rhythm with a few periods of imperfectly sustained tonus (see Fig. 3).

EXPERIMENT XXXI.—Suspended ventricle of active terrapin. Preliminary intravenous injections of atropin and beta-eucain followed by a 0.7 c.c. of 0.1 per cent. strophanthin (amor.) solution. After a period of auriculoventricular block with from two to four auricular beats to one of the ventricle, a complete block for auricular beats occurred. 0.075 c.c. of saturated strychnin solution in normal chlorid solution was followed by a ventricular systole when injected into the right auricle. After 16 auricular beats, a second injection into the ventricle brought about a slow powerful rhythm of it with a gradual decrease in force until it ceased. A subsequent injection of strychnin produced no effect except that due to the

19. Gaskell, W. H.: On the Innervation of the Heart, with Especial Reference to the Heart of the Tortoise, Jour. Physiol., 1883, iv, 43.

mechanical stimulation of the needle, but the ventricle still responded to the stroke of a pin with a fairly powerful systole (Fig. 4). This experiment with others would seem to indicate that after the probable removal of the vagus inhibitory fibers by atropin and the sensory fibers by beta-eucain, strophanthin produced auriculoventricular block which could be eliminated by the injection of strychnin into the ventricle. The toxic effect of the two drugs was great enough to keep the heart quiet, although its muscle still responded readily to mechanical stimulation. Whether the strychnin so applied caused the ventricle to set up an individual rhythm, or removed the existing block by increasing the strength of the impulses along the connecting paths or lowering the level of resistance to them, I am unable to state.

EXPERIMENT XXXIII.—Ventricle strip of terrapin heart cut out in the usual way. When rhythmic contractions had begun in normal saline solution, strophanthin (amor.) 0.1 per cent. solution substituted, and after the usual preliminary period of increased rate and force, there were alternating large and small systoles followed by decreased rate with fairly regular force until the strip came to a standstill. After four minutes strychnin but removed by washing with Locke's solution so that maximum systoles again occurred (Fig. 6).

EXPERIMENT LIV.—Right auricle and sinus venosus of terrapin isolated and immersed. After regular beating was established in 0.1 per cent. ouabain solution which caused increased tone and rate, then as in Experiment XLVII, a sudden decrease in rate of from 12 per minute to 6 with increased force of beat which continued until, after a period of irregularity in rate with gradual increasing diastoles, a complete standstill occurred. Immersion in strychnin solution immediately brought about rapid irregular contractions partly in staircase series until the strip ceased to beat (Fig. 7).

EXPERIMENT L.—Auricle and sinus venosus. Strophanthin followed by strychnin. Auricle with portion of sinus venosus suspended in moist chamber. The sinus was beating twice to the ventricle's once. Ouabain crystals were applied to the outside of the sinus venosus at the junction with the auricular strip, and the auricle ceased to beat, the sinus continuing its contractions as before. A mechanical stimulus applied to the auricle produced a single contraction, hence the ouabain had produced block between the sinus venosus and the auricle.

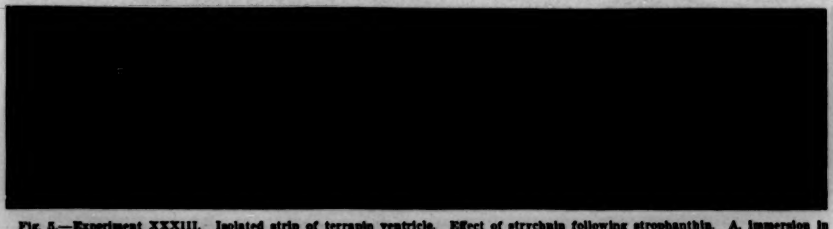

Fig. 5.—Experiment XXXIII. Isolated strip of terrapin ventricle. Effect of strychnin following strophanthin. A, immersion in 0.1 per cent. strophanthin (amor.) solution; B, strophanthin removed and strychnin (sat. sol.) in sodium chlorid substituted; C, washed with sodium chlorid solution; D, washed with Ringer's solution.

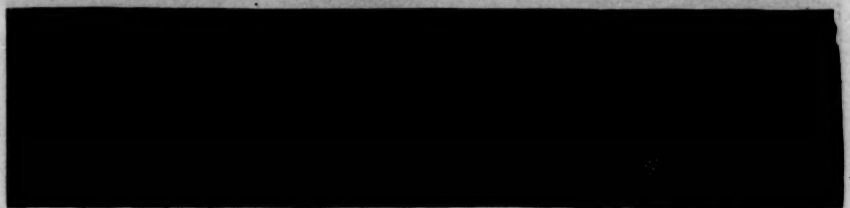

Fig. 6.—Experiment XLVII. Suspended right auricle of terrapin in moist chamber. Strophanthin crystals followed by strychnin. (Tracing begins at right lower corner, lowest line, time in quarter minutes.) A, crystals of ouabain applied to inner surface, B, washed; C, crystals of ouabain; D, strychnin solution; E, beta-eucain; F, ouabain crystals; G, strychnin solution.

the strip was immersed in the strychnin solution and instantly began to beat regularly and powerfully for eight systoles. It was then quiet for a short time but gradually resumed regular contractions when washed with sodium chlorid solution and Ringer's solution; thus showing that the muscle had not been permanently damaged by the poisons (Fig. 5).

EXPERIMENT XLVII.—Strip of right auricle of terrapin heart isolated and suspended in a moist chamber. Pure crystals of ouabain (strophanthin G) applied to the dry inner side caused an increase in rate with uniform systole for two and one-half minutes, when the rate suddenly became one-half as fast with increased force of systole. After washing off with Na Cl solution, more crystals applied to the damp surface brought the strip to a standstill. In two and a half minutes after strychnin solution was poured on the strip, it resumed a regular rhythm unaffected at first except in force by beta-eucain solution, which did not prevent the subsequent application of strophanthin from causing a gradual slowing of the force and rate of the strip's beat. This was unaffected by The strychnin solution was then applied and in one minute, after a short series of sinus venosus two contractions and auricle one contraction, the auricle began to beat with a little less force but with each contraction of the sinus venosus. This indicates apparently the ability of strychnin to overcome sinus venosus and auricle block due to strophanthin.

EXPERIMENT XL.—Ventricle and bulbus arteriosus suspended with sinus venosus and auricle cut away. After a short time spontaneous halving of rate with increase in force. Tincture of iodin on the apex had but little effect, but when it was applied to the stump of the auricle it caused more rapid irregular contraction. After a slower, feebler rate was resumed, immersion in strophanthin solution was immediately followed by rapid alternating contractions, practically a delirium cordis, with subsequent asystole of the ventricle and feeble beating of the bulbus arteriosus. No effect was noticeable after the application of strychnin. The sequence of normal contraction is from the ventricle to the bulbus arteriosus. In this experiment, the strophanthin apparently actively stimu-

V. 5 1911

lated the connecting tissue at the base of the auricle perhaps made sensitive by the preliminary irritation of iodin.

These briefly sketched experiments with many others not here enumerated seem to bring out the following points:

1. Effects like those following toxic doses of digitalis may be obtained from the application of some irritants, which perhaps are also muscle poisons, to the surface of the terrapin heart.

2. Localized application of ouabain crystals to isolated portions of the terrapin heart produce the characteristic effects, even after the use of atropin and cocain. Block between the different portions is readily obtained. The sinus venosus, the seat of origin of the heart-beat in the terrapin, is the most resistant portion of the terrapin heart to direct digitalis effects.

3. Strychnin solutions often remove the block between different sections of the heart due to strophanthin. Preliminary injections of strychnin enhance and prolong the period of stimulation that immediately follows the administration and delays the toxic symptoms of strophanthin.

Fig. 7.—Experiment LIV. Isolated right auricle and sinus venosus of terrapin heart. Strophanthin followed by strychnin. A, strophanthin solution of 0.1 per cent.; B, strychnin solution substituted for strophanthin.

Fig. 8.—Experiment L. Suspended auricle and sinus venosus. Effect of strophanthin followed by strychnin. A, ouabain crystals to the sinus venosus near auricle; B, strychnin applied.

4. It is possible to stimulate directly by chemical agents the connecting bundles between the auricles and ventricles with resultant rapid irregular ventricular contractions.

Before considering these effects in regard to any light that they may throw on whether nervous or muscular tissue is primarily concerned in conduction within the heart, it would be well to have in mind some of the more recent observations made on the mammalian as well as on the amphibian heart. This is particularly desirable with reference to the various drug effects, including the digitalis series. The effects of digitalis in cold-blooded animals have been shown to be analogous to those in the warm-blooded, and conclusions drawn from them are applicable to mammals.[5, 20] The intricacy of this action is well indicated by such a statement as that of Edens,[21] that digitalis acts on the most damaged part of the cardiac mechanism. To build up any form of explanation for drug or other effects on the heart, it is necessary to have some conception of the cause of the heart-beat, of the site of its origin, of the conduction of the impulse to contract throughout the heart, as to whether these paths are of a primitive muscular character or of a nervous one, and as to which tissue and in which part of the heart the most striking effect of the drug asserts itself. This necessarily concerns itself with the neurogenic as opposed to the myogenic point of view of the origin of the heart-beat and of its transmission.

Gossage[35] says that a conducting system of nerves will explain conduction of impulses over the whole heart as well as will muscle. Besides, the nerve substance is primarily for conduction. Carlson, in his well-known work, has demonstrated that in the limulus heart, automatic beating depends on the nerve-cells of the ganglion.

It is particularly difficult to say in the striking effects shown by digitalis on irregular hearts (Gottlieb and Magnus), especially those due to auricular fibrillation (Cushny,[36] Hewlett,[37] Lewis[38]), on which tissue the drug has its greatest effect, but this unknown tissue is certainly one concerned in conduction.

For our present purpose of distinguishing muscular from nervous effects, we need not enter into all of the various kinds of action on the heart credited to digitalis, discuss the effect of atropin on the vagus mechanism or those of cocain and beta-eucain on sensory nerve-endings, but we do need to remember that the toxic effects of digitalis are much like those it is administered to remove (Tabora[40]), its ordinary effect is largely regulatory, that it acts best on irregularities originating below

20. Pouchet, G.: Digitale. Dict. de Physiol. (Richet), vol. i.
21. Edens, E.: Pulsstudien, Habilit. Schr., Univ. München., Leipzig (Vogel), 1910, 57.

35. Gossage: Anatomic Rhythm of the Heart, Brit. Med. Jour., 1907, ii, 1818.
36. Cushny, A. R.: Digitalis and Its Allies, Am. Jour. Med. Sc., April, 1911, p. 469; Irregularity of the Heart and Auricular Fibrillation, Am. Jour. Med. Sc., 1911, cxli, 826.
37. Hewlett: Auricular Fibrillation, Heart, 1910, vol. ii, No. 2.
38. Lewis: Auricular Fibrillation, Heart, 1910, vol. i, No. 4.
40. Tabora, V.: Ueber die experimentelle Erzeugung von Kammer Systolenausfall und Dissociation mit Digitalis, Ztschr. f. exper. Path., 1906, iii, 490.

the Keith-Flack node (Cushny), and that it acts on nerve-endings and has definite effects on the irritability and contractility of muscle. It is not impossible that its effect on conduction is definitely on the primitive muscle of the bundles. But that its effects on the nervous tissue are predominant seems more likely. As Cushny has pointed out in auriculoventricular block, digitalis does not slow the ventricle as might be expected were its action a direct one on muscle, but it does slow the auricle. The apparent ability of strychnin to remove, at times, the block caused by strophanthin is suggestive of the effect being on the nervous elements of the conducting bundles; still there is some variability of opinion in regard to the effect of strychnin on the heart and on nerve-cells and fibers. There is a question whether it directly stimulates the muscle, increases its irritability or increases the force of the impulses passing down the bundles or lowers the level of resistance to them. That the action of strychnin may be based on some special chemical differences between the tissues has been well brought out by Koch,[43] who has demonstrated the rapidly toxic action of strychnin when combined with lecithin. Its effect on the central nervous system seems well established. On motor cells it either increases the irritability or lowers the threshold for stimuli (Ryan and McGuigan[44]), and Retzius has shown that the great ganglionic cells of the heart of the frog are comparable to cells of the anterior horn of the spinal cord. The wide distribution of ganglion cells, particularly in the region of the various nodes and connecting bundles, is as well-known now for the mammalian heart as for the amphibian. Igersheimer[50] found a permanent diastolic stopping of the isolated frog's heart following perfusion of moderate strychnin solutions, although the muscle remained long susceptible to mechanical or electrical stimulation. This is similar to the condition previously described for digitalis. After very strong doses the muscle was not excitable. He considered this to mean that the first effects of strychnin are on the nervous elements, and he was able to overcome it with camphor, which has been shown by Böhme to stimulate the nervous apparatus, as it can bring back to beating the heart which has been brought to rest by chloral hydrate. The interference with rhythm that comes in one stage of chloral poisoning was also found by Henderson[51] to be eliminated by camphor. The results of Igersheimer I found to hold true for the terrapin heart and he worked them out as well for the rabbit. Atropin had no particular effect on them, so that it is evidently not due to the vagus mechanism. Hare is authority for the statement that "nux vomica has some slight influence in increasing the conducting power of motor and sensory nerves," and Hirschfelder, in his recent treatise, notes that clinically, strychnin is valuable when given with digitalis. While it is impossible to interpret accurately the effect of strychnin and its relation to strophanthin, the work reviewed and the experiments done by me would seem to indicate that the digitalis bodies modify the conduction throughout the heart, that this conduction is along nervous paths and that strychnin, by its actions on these same paths, can overcome the resistance offered to stimuli or cause new ones to take their places.

The action of atropin, cocain and beta-eucain does not throw much light on the matter of conduction. The latter two act much alike, paralyzing sensory nerve-endings and increasing force of contractions from small doses, but producing lessened power of contraction with alternation and standstill from larger ones. The heart so brought to asystole will, just as after it is induced by strophanthin and strychnin and after external use of irritants, still respond to mechanical stimulation.

Recently, Cullis and Dickson have not only clearly found the significance of the bundle in coordinating the contractions of the isolated rabbit heart, but have attempted with various drugs to show that the muscle elements in it are essential to its conduction. By electrical stimulation as well as by the application of rock salt, acids, etc., to the peripheral end of the severed bundle, acceleration of the ventricle like the delirium cordis of digitalis and similar to that noted in Experiment XL resulted. The fact that after depression of the heart with chloral hydrate partial section of the auriculoventricular bundle has but little effect, they ascribe to its acting on the specialized muscle of the bundle before it does on the general musculature of the heart. That this is an effect on the nervous tissue would seem more plausible. Five per cent. cocain solution applied to the bundle was without result, but since its principal effect is on nerve-endings, this would not speak against nervous conduction. Since they obtain, during the first minute or two, no stimulating results from nicotin applied to the bundle, they eliminate nerve-cells as the cause of the previous phenomena mentioned, but this does not eliminate the nerve fibers present. In their conclusion that irritation of the bundle is brought about only by muscle stimulants, they evidently lose sight of the possibility of the stimulation of nerve fibers which can readily be caused by the chemicals mentioned. Besides, these fibers are a portion of the plexus of the heart, and the physiology of the various portions of a

Fig. 9.—Experiment XL. Isolated ventricle and bulbus arteriosus of terrapin heart. A, tincture of iodin to apex; B, tincture of iodin to stump of auricles; C, immersion in ouabain solution; D, strychnin solution.

43. Koch, W.: Recent Studies on Lipoids, THE JOURNAL A. M. A., March 18, 1911, p. 799.
44. Ryan and McGuigan, H.: Jour. Pharm. and Exper. Therap., March, 1911, 2, 319.
50. Igersheimer: Ueber die Wirkung des Strychnins auf des Kalt- u. Warmblueterherz, Arch. f. exper. Path. u. Pharm., 1905-06, liv, 73.
51. Henderson: Therapeutic Action of Digitalis, Am. Jour. Med. Sc., September, 1910.

plexus needs much further research before we can be sure of the function of the elements that make it up. Taken all in all and considering the present state of our information as brought out so well by Thorel,[59] it seems more reasonable to explain the various phenomena associated with the automatism and the conduction of the heart-beat, from one part to another, as resting on a nervous basis rather than on a muscular one.

GENERAL CONCLUSIONS

1. The rôle of the serous surfaces of the heart in drug effects needs more consideration.
2. Strophanthin acts largely on the nervous mechanism of the heart, perhaps partly through its stimulation of the sensory nerve-endings of the endocardium.
3. The effect of strophanthin on conduction within the terrapin heart can at times be overcome by strychnin. This conduction is probably along nervous paths. Preliminary administration of strychnin enhances the early stimulating effects of strophanthin.

The relation of these drugs should be further studied clinically, as should the use of strychnin alone or in conjunction with atropin in partial heart-block.

TWO RUBBER DRAINAGE-TUBES, WITH A SINGLE STAB WOUND EXIT, IN ABDOMINAL SURGERY*

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I wish to describe a distinct method of drainage which I am using in abdominal surgery. I hope that a description of the method may prove of service to others.

While I have frequently used it for draining spaces in the region of the kidney and appendix, most of my experience has been derived from its use in connection with operation for gall-stone disease.

Either the cigarette drain or rubber tubing threaded with gauze has doubtless afforded the most ordinary means of drainage by surgeons in general. Sometimes these drains have found exit through stab wounds, but more generally they have emerged from the incision with the opposing edges of the incision sewed around the drain.

In my employment of solitary and cigarette drains I have repeatedly observed a considerable gush or flow of serum, pus, or blood to follow their removal. Sometimes a rise in temperature and an increase in the leukocyte count were the conditions which made me withdraw the solitary drain. Fever, leukocytosis, and the other ordinary symptoms of sepsis ordinarily disappeared after removal of the obstructing drain.

The embarrassments incident to arrest of the drainage stream, whether obstructed by a cigarette drain, or a single rubber tube, led me to employ two rubber tubes with a common sinus of exit, instead of a single tube for the drainage of any sort of an exudative space where continuous evacuation was desired.

From that time hundreds of stab wounds, from every one of which twin rubber tubes emerged, constituted the ensemble of experience from which was obtained a certain amount of knowledge of materials and the manner of their employment in twin drainage.

Although my first use of this drainage with stab-wound exit was in many ways faulty, the inherent value of two tubes with a common stab wound exit was in itself so much greater than that of a single tube that, even in the very beginning of its use, imperfect as the technic then was, much was gained from the use of two rubber tubes instead of one.

The special size and length of the rubber tubing best suited for the drainage of any particular exudative, secretional, excretional, or bleeding space, the size of the drainage wick with which the lumen of each tube was threaded, the length of the gauze tails projecting beyond the ends of the tubes, and the placing of them in the spaces, the actual introduction or installation of the drains, the numerous and actually varying conditions affecting siphonage, the time and manner of removing the drainage parts, were all matters which had to be tried in various ways, and often over and over again, in order to acquire a proper working knowledge of the system.

DRAINAGE CHANNELS

Figure 1 represents a cross-section of tissue traversed by a pair of drainage-tubes, the two white circles the walls of the tubes, the black centers the lumens of the tube or the drainage channels. The two triangular black spaces appearing between the opposing peripheries of the tube and the bridging tissue also serve as drainage channels. Thus in twin-tube drainage there are, in addition to the two luminal spaces, the two triangular spaces, together affording four distinct drainage channels, whereas a single tube affords but one drainage channel.

Fig. 1.—Diagram of a cross-section of tissue traversed by a pair of drainage-tubes.

It is true that the two very small and triangular drainage spaces will tend to close, but in a day or two, and before these spaces close, they and the lumens of the two tubes will have accomplished their most important task, which is to evacuate the exudation as rapidly as it appears, and thus favor an early and complete walling off of the exudative space.

Every distinct exudative area or space which it is desired to drain may be provided for with one or more pairs of drainage-tubes. These tubes are always threaded either with iodoformed or plain gauze, only rarely the latter.

Figure 2 shows a few drainage-tubes as they are ordinarily prepared and placed on the instrument table before operation. For intra-abdominal drainage these tubes are usually cut to a length of from 15 to 20 or more inches, according to the size of the patient and location of the drain. The sizes and lengths of these tubes may be estimated by the lines which cross the picture at right angles to one another, and which are exactly 1 inch apart. Attention is directed to the tails of gauze which project from the ends of the long tubes, shown in Figure 2.

For the evacuation of fluids from intra-abdominal spaces, my drains no longer emerge from the incision. They are brought directly out through the abdominal wall at some point sufficiently away from the incision to

59. Thorel: Pathologie der Kreislauforgane, Ergeb. d. allgem. Pathol., 1910, xiv, 133.

* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

avoid, if possible, the incision or any of the exudative spaces common to it, and also at a point as far as possible beneath the incision to favor outflow, the postoperative posture of the patient being kept in view when the drains are installed.

INSTALLATION OF TWIN DRAINS

When it is desired to pass a pair of drainage-tubes through the abdominal wall, the assistant grasps the peritoneum, the fascia, and the skin, each with a pair of forceps, and while stretching them slightly and holding them in alignment, the operator makes with a sharp knife, a small stab wound just through the skin at the point where it is desired to transfix the abdominal wall. While these three parts, the peritoneum, fascia and skin are slightly stretched and held in alignment, a rather pointed and strong forceps (Carmalt's hemostats preferred) are introduced through the stab wound in the skin, and forced directly through the tissues comprising the abdominal wall.

While thus transfixing the abdominal wall, the operator must, of course, have his hand or fingers inside to

Fig. 2.—Drainage-tubes ordinarily prepared.

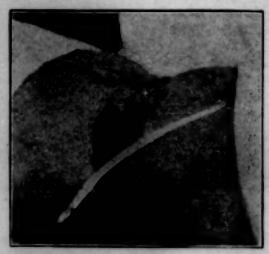


Fig. 3.—Installation of a drainage space.

Fig. 4.—The covering of the incision by adhesive plaster.

push aside the viscera and protect them from harm, while receiving the point of the transfixing forceps. The penetrating or transfixing forceps is then opened to enlarge the stab wound sufficiently to allow the rather easy withdrawal of the folded tube from within outward.

If the stab wound is disproportionately small, undue traction will be necessary to draw the tubes from within outward, and it will also have the additional disadvantage of compressing the tubes, and possibly not only restricting their luminal spaces, but also of obliterating the two triangular drainage channels. On the other hand, the stab wound which is to be traversed by a pair of drainage-tubes should not be made larger than necessary for the easy introduction and transmission of the tubes.

Having with the penetration forceps drawn the long threaded and doubled drainage-tube from within outward, the operator next determines how much, if any, of either tube he wishes to have project to any point or points in the peritoneal cavity, gall-bladder, or other space. He must determine the amount or length of gauze tail he would have project from each tube, and after cutting each tail and removing all loose or easily detachable ravelings, place it where desired.

PLACING OF THE DRAINAGE TAILS

When the operator desires to drain but one exudative or other fluid-producing space, he must provide against the entanglement of the tail of one drainage-tube with that of the other. The only safe way to avoid entanglement and possible knotting of the two tails is always to leave one of them only long enough to reach to, or toward the exudative space. If this is done, the tail of the other tube may be left as long as the operator desires. He may thus leave several inches or even feet of it in an exudative space if he desires, without fear of entanglement to embarrass its removal, provided he carefully folds the gauze tail backward and forward in a to-and-fro manner and thus reposes it in the exudative space.

If the operator wishes to provide for the evacuation of two distinct spaces so separated from each other as not to entangle the drainage tails, the wick from each tube may doubtless safely be left as long as he desires.

If the operator, when installing the two tails of companion drainage-tubes in one exudative space, will always remember so to place them that the tube to his left is the one having the longer tail, and the tube to his right the one with the shorter tail, no further thought will be required when he comes to remove them, than to remember his habitual custom in this relation. The tube to his right will always be the first one to be withdrawn, and the tube to his left will be the last one to be removed.

V. 57
1911

ANCHORING THE DRAINS

When tubes and drainage tails have been placed, a needle, threaded with catgut, is next introduced through the lip of skin bridging the upper triangular space between the tubes. The ends are carried around one of the tubes and tied with a single knot, then carried around the other tube and doubly knotted, in so careful a manner as to exert slight pressure on each of the tubes, and to serve when thus tied as an anchorage and to prevent either inward or outward movement of the tubes.

The drainage wick of any tube should never have more than one tail. This can be avoided by using but one strip of cloth in a tube.

THE PRIMING OF A DRAINAGE-SPACE

A few drams of normal salt solution poured into an intramural space just before the overlying tier suturing is completed will help to start the drainage stream through the tubes and the triangular drainage channels.

To complete the installation of the tubes, it now only remains for the operator to sever with scissors or knife the depending loop of tubing and place a small strip of

adhesive plaster, as shown in Figure 3, across these tubes to hold them in any position desired.

Each of the two tubes of twin drainage, when properly installed, forms a siphon, the working of which, although influenced by many conditions, is very particularly affected by two of them: the altitude of the angle of the siphon above the drainage-space, and the length of the outer and longer or discharging leg of the siphon.

In selecting a point of exit for twin drains, the operator must keep in mind the most likely posture of the patient after operation, and locate the stab wound at as low a point as possible in relation to the exudative space which it is desired to drain. The lower the point of transfixion of the abdominal wall for the siphon, the more will drainage be favored. To render these siphons most efficient, the long legs should be left as long as possible.

Discharge from the two triangular channels between the bridging tissues and the peripheries of the tubes,

Fig. 5.—Method of determining size of the gauze drainage wick and of threading tubing with gauze.

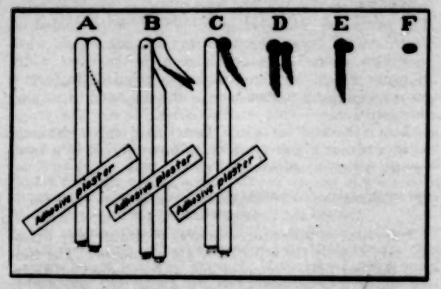


Fig. 6.—Piecemeal and gradual removal of parts.

fortunately, is generally favored by intra-abdominal pressure. It is also sometimes affected by gravity, but it probably only rarely happens that siphonage is a factor in aiding the outflow from the triangular channels.

In the employment of twin drainage, splitting of tubes, or the cutting of holes in them is generally both unnecessary and undesirable, excepting in such portions of tubing as may sometimes extend beyond the peritoneum toward, through, or into actual exudative, bleeding, excretional or secretional spaces. It is also quite unnecessary to fenestrate, split, or cut holes in such portions of these tubes as traverse the abdominal wall.

The two triangular spaces between the bridging tissues and the tubes afford sufficient drainage for the escape of serum or blood, which may originate at any point along the course of mural transfixion. So that if infection occurs at any point along the stab wound, the two triangular spaces are likely to afford outward escape for the exudates. As before stated, it is very desirable, when possible, in transfixing the abdominal wall, to avoid opening into any spaces which communicate with the incision.

THE IMMEDIATE DRESSING OF THE WOUND

Twin drains are always brought out of stab wounds sufficiently away from the line of incision to permit the operator to place a sterile dry pad on the incision itself, and to cover and protect it properly without having the edges of this pad encroach in any way on the stab wound or wounds through which the drainage tubes find exit.

The covering of the incision, consisting of a pad of cotton resting between two layers of gauze, is held in place by broad straps of adhesive plaster which are so placed as to exert pressure on the pad, and at the same time not to cover any of the wounds or parts of the drainage-system, and very often as shown in Figure 4.

The next step in the primary dressing of the field of operation is to cover the stab wounds and the tubes which emerge therefrom with an apron of folded gauze. On this gauze apron is placed a moderately thick layer of surgeon's cotton. This, in turn, is covered with a layer of gauze, and the dressing is held in place by three or four very narrow, long straps of adhesive plaster.

These pads which overlie the stab wound and drainage parts may be removed with the greatest ease at any time, by simply cutting the narrow adhesive straps on the anterior aspect of the body and removing the gauze pads. They may be so removed and replaced with new dressings as often as desired, and without disturbing the

Fig. 7.—Showing ordinary location of stab wounds in relation to the incision in operation for gall-stone disease.

incisional dressings or the broad and strong plasters which hold that part of the body so firmly in one position, until solid healing of the incisional wound is accomplished.

If, in addition to intraperitoneal drainage, intramural drainage is properly installed and cared for, the necessity of inspecting or dressing the incision will rarely arise during the course of the patient's recovery.

The drains which lead from exudative spaces and peritoneal cavity, and those which drain the incisional spaces always have exit through stab wounds from 2 to 4, 5 or 6 inches, or even more, away from the incision, and since the incisional spaces so rarely suppurate when thus drained, there is seldom either excuse or necessity for the removal of the primary dressing of the incision until the patient is well.

INTRAMURAL DRAINAGE OF INCISIONAL SPACES

When the abdominal incision is closed with tier sutures, and in the ordinary manner of sewing first the peritoneum, then the fascia, and lastly the skin, there are left two distinct spaces into which more or less blood

or exudation may pour within the first few hours or a day following operation.

Blood or exudation thus thrown into pockets of the incision, if free from infective material, may not very materially impair the healing of the tissues severed by the incisional wound. If, however, sufficient infective material is entrapped in an intramural space, suppuration and consequent impairment of the strength of the abdominal wall at place of incision is likely to occur.

Appreciating the positive disadvantage of such intramural accumulations, I resolved to employ my twin drainage system regularly for the evacuation of these spaces. From that time onward with almost every case of abdominal section, a pair of twin drains emerging from a stab wound 2 inches or more away from the incision was so placed as to drain the intrafascial space, and another pair of drainage-tubes emerging from another small stab wound was so placed as to drain the suprafascial space.

The experience derived from the employment of several hundred intramural twin drains convinced me that no patient lost anything from such experimental drainage, while the greatest benefit accrued to some.

I believe that whenever it is possible to drain intraperitoneal exudative spaces without invading the abdominal incision or any of its connecting spaces, as may be accomplished through stab-wound exits, it is most desirable to do so. I also believe that the employment of the twin drainage-system for the two most important exudative spaces in the incision is an advantage. I have so generally witnessed a satisfactory healing of the incision by not utilizing it as an exit way for the evacuation of intraperitoneal collections that I am forced to conclude that the habit of draining exudative spaces of the peritoneal cavity through the incision is rarely necessary, and often faulty, in that it exposes the incision to possible infection, thus unnecessarily endangering the future integrity of the abdominal wall at point of incision, which point is, furthermore, often the most difficult and least dependent point of exit for the evacuation of intraperitoneal collections.

KIND AND SIZES OF TUBING BEST SUITED TO TWIN DRAINAGE

A most important item in the matter of twin drainage is the particular kind of rubber tubing which one employs. So-called pure gum tubing is so soft that comparatively light pressure distorts it. Not only are tubes which are too easily compressed liable to have the drainage streams within them retarded or arrested, but the two tubes may so shape themselves on each other when their peripheries are compressed, as practically to obliterate the two triangular drainage channels to which attention has been so particularly directed.

Rubber tubing which contains less gum is cheaper and being more indurated than pure gum tubing, is not so apt to become distorted from pressure, and, therefore, is more likely to secure and maintain for the operator the four distinct drainage channels obtainable from twin drainage. The rubber composing the most desirable tubing which I have used in twin drainage appeared to have about the same consistency as that of the ordinary soft rubber catheter.

The outside diameters of the drainage tubes generally used for intraperitoneal drainage have varied from 0.260 to 0.333 inch. The circumference of a drainage sinus after immediate and total withdrawal of a pair of tubes, each ⅓ inch in diameter, is 1¾ inches.

For drainage of exudative and bleeding spaces in the abdominal incision much smaller tubes varying from 1/5 to 1/4 inch in diameter are used. The internal diameter of the tubes intended for use in twin drainage should never be more than 4/6 nor less than 4/7 of their outside diameters.

THREADING DRAINAGE-TUBES WITH GAUZE

It is important that the filler or gauze drainage wick of each drainage tube should be of proper size. Both laboratory and clinical experience has shown me that a drainage wick which tightly crowds the luminal space of a tube retards siphonage, while the wick which is less compressed in the luminal space favors flow through the tube. It is, therefore, desirable to select a wick of uniform width, and of such size that it does not crowd the lumen of the tube.

To determine the size of the gauze wick for any particular size of rubber tubing, let a piece of perfectly dry gauze of uniform width, and 6 inches long, be passed through the loop of the traction wire, as shown in Figure 5, and then drawn by it through the tube. If the gauze thus folded passes very easily through the tube, and, while being so drawn, exerts no tension on the traction wire, a wider piece of gauze must be tried, and so on until a width of gauze is found which, when folded and drawn through the tube, exerts a decided degree of tension on the threading or traction wire. The particular width of gauze which, when folded on itself, can be drawn through the tube, but which, when so drawn, exerts a decided tension, is the exact width of gauze which, when not folded, is required to form a proper wick for a rubber tube of the size used in making the test.

As to the kind of gauze best suited for a drainage wick, a rather flimsy fabric is to be preferred to a more tightly woven or substantial cloth.

IMPORTANT CONSIDERATIONS REGARDING REMOVAL OF DRAINS

Improper or premature removal of drains may defeat the very objects for which they are employed. The time and manner of the removal and abandonment of drainage parts is a matter of the greatest importance.

In Figure 6, *A* is intended to show the long legs of the two siphons as they emerge from a common stab wound; *B*, the manner of cutting off one of the rubber legs of a siphon and its contained gauze, prior to the withdrawal of the enveloping tube from the gauze; *C*, the gauze filler or wick remaining in the sinus after the removal of its enveloping tube. (This procedure is ordinarily reached on the third or fourth day following operation.) *D* shows the two gauze drains remaining after the enveloping tubes have both been pulled off them and out of the sinus (commonly removed on the seventh or eighth day after operation); *E*, the deeper, longer, and presumably more important of the two gauze drains after removal of the shorter one (and as the drainage ordinarily appears on the eleventh or twelfth day following operation); *F*, the unclosed sinus after the removal of the component parts of the twin drainage (and as it commonly appears on the thirteenth or fourteenth day following operation).

While the respective parts of a twin drainage system for the evacuation of intraperitoneal exudation may generally be withdrawn and dispensed with in about the space of time above indicated, certain conditions might make it safe to accomplish in piecemeal fashion the total removal of the drainage parts at an earlier time. On

V. 5
1911

the other hand, there are cases in which infection or other factors afford a profuse and prolonged drainage stream and may render it necessary to very much more gradually dispense with the drainage parts. In isolated instances twice or thrice the average space of time ordinarily taken may be required for the safe abandonment of all the drainage parts. Every drainage sinus must be maintained until the discharge therefrom is practically *nil*.

To show the ordinary location of stab wounds in relation to the incisions in operations for gall-stone disease, I present, in Figure 7, the photograph of a patient after recovery from operation and before leaving the hospital. *A*, in Figure 7, shows the line of incision; *B*, the point of exit of the twin drains leading to the intraperitoneal exudative spaces; *C*, the point of exit for the drainage from the infrafascial space; *D*, the point of exit for the drainage from the suprafascial space.

Much has been learned from rather extensive experience with this somewhat elaborate system of drainage, and I feel that this method of evacuation, particularly when practiced as here described, constitutes a step forward.

26 Church Street.

MOTHER WITH IMPERFORATE ANUS DELIVERED OF NORMAL CHILD

ORVALL SMILEY, M.D.
INDIANAPOLIS

I was called at 2 a. m. to attend Mrs. N., aged 27, a primipara, well developed and well nourished, in labor. Her condition was normal. Pains had been coming very strong every five minutes for two hours. I did not know her condition until after the examination, after which I found that she had an imperforate anus, the rectum opening into the vagina 2 inches from the vaginal orifice. At the opening of the rectum there was an elliptical sphincter, which, though light, was sufficient to give the patient control of her bowels.

She had a very firm perineal body or muscular band extending from the true perineal body posteriorly to the coccyx. The sacrum bulged somewhat forward. The vaginal orifice would admit only two fingers and that with considerable difficulty, causing much discomfort to the patient. The clitoris was somewhat enlarged and very firm. A condition of hypospadias existed. The meatus of the urethra opened just under the clitoris. The urethra passed to the bladder just under the symphysis pubis; as near as I could make out it was an S-shaped tract.

On further examination I found the head engaged, position left occipito-anterior. After eighteen hours of labor pains coming hard and fast, no progress was made. The muscular perineum would not give. The forceps was put on under complete anesthesia and after considerable effort a 9½-pound baby girl was delivered, the muscular band referred to above being somewhat lacerated.

For thirty hours after delivery the patient was unable to void urine. Repeated attempts to pass catheters, sounds and bougies together with hot applications failed. With a urethral syringe I forcibly injected 2 per cent. boric acid in glycerin into the bladder; she voided 21 ounces of urine fifteen minutes later.

Up to the third day the temperature was normal. At this time she was given ½ ounce of castor oil which failed to have any effect. On the fourth day oil was repeated, bowels moved slightly and her temperature began to rise. The vagina was washed out every three hours night and day for seven days with a 3 per cent. dilution of liquor cresolis compositus, followed by an intra-uterine irrigation of a 25 per cent. hot alcohol solution.

On the fifth day the bowels had not moved. After two liberal doses of castor oil and Rochelle salts the patient was given a high enema which produced a thorough evacuation of the bowels.

From the fifth to the twelfth day her temperature ranged from 100.5 to 102.5, pulse 95 to 112 and there was a very foul-smelling, copious uterine discharge.

On the twelfth day the temperature began to drop and the thirteenth day was normal and uterine discharge had practically ceased.

Mother and baby from this time on did well. The patient still has full control of her bowels.

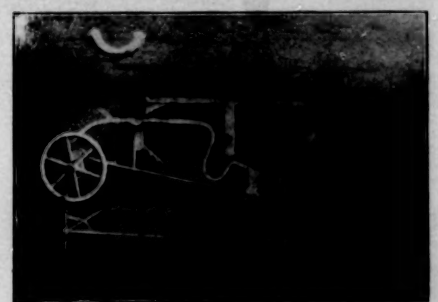
In conclusion I wish to acknowledge my indebtedness to Dr. J. R. Mountain for invaluable assistance in delivering this patient.

229 Newton Claypool Building

THIGH SUPPORT FOR KIDNEY OPERATIONS

DANIEL N. EISENDRATH, A.B., M.D.
CHICAGO

For operations on the kidney the majority of operators prefer to place the patient in a lateral position with the thighs flexed on the abdomen. Unless the thighs are thus held by an assistant they are soon extended,



Apparatus for thigh rest to prevent trunk falling backward and forward during kidney operation. A, padded flat metal support for thigh; B, joint to permit rotation of rest; C, horizontal portion to permit rest, to be adjusted to various positions; D, vertical support, to be raised or lowered by movements of screw F, for different thicknesses of thigh; E, apparatus for lifting iliocostal space.

permitting the patient to fall forward or backward and greatly interfering with exposure of the kidney. This change in position during the operation occurs even when the iliocostal space of the side opposite to that which is to be operated on, is raised by some form of support such as is now generally employed (See E in illustration).

About one year ago I devised an apparatus to keep both thighs flexed by supporting the upper thigh on a wide, well-padded metal band (A). It can be readily adjusted to any one of the most generally used operating tables. The apparatus is so constructed that it can be applied to either side of the table. The support can be raised or lowered or moved toward, or away from, the median line, as the patient's length, etc., requires. We have employed this support in a number of kidney operations at the Michael Reese Hospital and find that it keeps the patient's body in a lateral position without permitting any rotation during the operation.

31 North State Street.

A NEW SELF-RETAINING VAGINAL SPECULUM FOR IMMEDIATE REPAIR OF THE PERINEUM

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SEATTLE, WASH.

The primary repair of the perineum is one of the important features of the obstetric work of every general practitioner, and often one of the most difficult and unsatisfactory to perform, owing to lack of the skilled assistants and inability to obtain a satisfactory view of the operative field.

To overcome these difficulties, I have devised a small instrument which is simple, light and self-retaining. It is quickly applied, giving a full view of both the anterior and posterior vaginal walls, and the operator

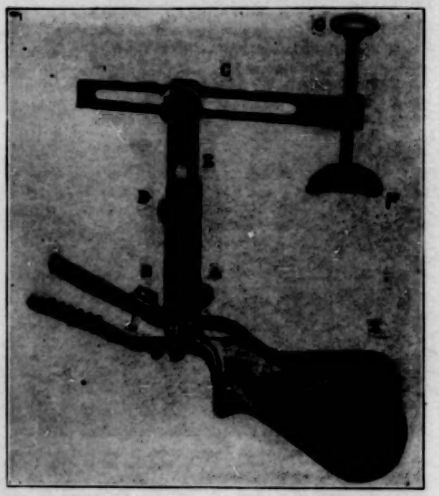

Fig. 1.—Self-retaining vaginal speculum for immediate repair of the peritoneum.

now has full use of both hands. The vagina can be packed with sterile gauze carried in a large test-tube and an immediate repair made in an easy, bloodless and satisfactory manner.

The instrument is conveniently carried in an ordinary obstetric bag and its mechanism is not complicated.

It is convenient for examination of the vagina after delivery as it can be painlessly inserted and can be used in operative work on the cervix.

A glance at the cuts of the instrument, together with the sectional view of the anatomy, will give a clear conception of the retaining principle. The lateral blades are inserted into the vagina and separated to the desired degree of lateral extension by means of the two threaded screws *A* and *B*, the horizontal arm *C* extending over the symphysis pubis.

By means of the screw *D*, the vertical arm *E* is shortened so that the concave plate *F* presses down firmly on the anterior abdominal wall above the symphysis. A few turns of the screw *G* now makes the instrument absolutely secure. The symphysis pubis is caught between vertical and horizontal arms (*E* and *C*), the divergent blade of the speculum (*J* and *K*) and the concave plate *F*.

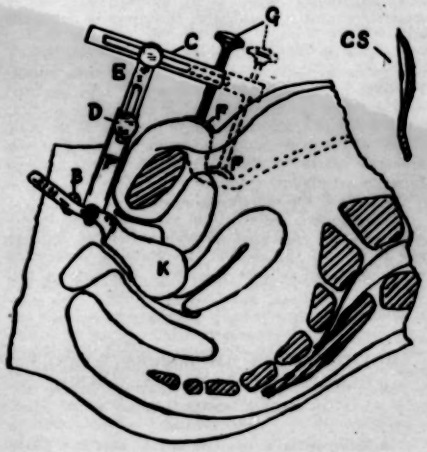

Fig. 2.—Diagram of instrument in use.

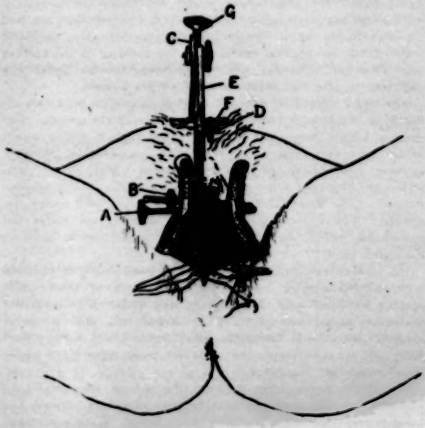

Fig. 3.—Sketch of instrument applied.

The relaxed condition of the abdominal walls, when an anesthetic is given, gives an even greater upward tilt to the handles of the speculum. Adequate room is now furnished for placing sutures, and a few turns of the screw *A* will relax the tension of the vaginal walls to allow an easy approximation in tying the sutures. *CS* indicates cross section of speculum blade.

V. 5
1911

UTERINE MYOMA

PERSONAL OBSERVATIONS IN THE STUDY OF 140 CONSECUTIVE OPERATIONS *

WALTER B. DORSETT, M.D.
ST. LOUIS

In the study of these 140 consecutive cases, I have noted some points which I will present for consideration. These questions are now being considered by our best surgeons, and were suggested to me by the histories of the patients and the clinical pictures presented on the operating-table. The three cardinal reasons for surgical intervention have been for the past decade:

1. *Hemorrhage.*—A. Menorrhagia: The amount of blood lost at each menstrual period being so great that the patient does not regain her normal circulatory equilibrium before the next menstrual period arrives, a continuance of this eventuates in hydremia.

B. Metrorrhagia: Indicative of rapid tendency to tumor necrosis.

2. *Rapidity of Growth (indicative of cystic or liquefactive changes) sarcomatous and carcinomatous degeneration.* — Though in adenocarcinoma in the fibroid uterus these changes may take place without rapid growth.

3. *Interference with the Functions of Contiguous Organs.*—A. Enuresis: By the encroachment of the growth on the normal bladder area.

B. The blocking-off by mechanical pressure on the cystic trigone resulting in retention of urine, or, for the same reason, the mechanical obstruction of the ureters, eventually producing hydronephrosis in rare instances.

C. The encroachment on the rectum to such a degree as to produce constipation and its resultant auto-intoxication, or by adhesions to coils of small bowel interfering with normal peristalsis, or adhesion to omentum which not infrequently results in a parasitic tumor of this organ.

While I have not been forgetful of these so-called cardinal reasons for operative interference, of late I have been so impressed with the possible and, in many cases, probable retrograde changes that may take place, that I have urged operations more frequently than I formerly did. In the pathologic examination of two specimens included in the 140 operations, adenocarcinoma was found in what some would term an inoffensive myoma, that is to say, the cases did not impress me as demanding immediate operation for this reason. In these cases there were no means by which a diagnosis of carcinomatous changes could have been made.

In reading recent discussions as to whether myomata undergo malignant degeneration, or whether the malignant elements are coincidentally present, we are impressed with the fact that clinically speaking the myomatous tumor is a dangerous tenant, and should be removed, if not for the reason that it is liable to degenerate into malignancy, then for the reason that by circulatory disturbances cystic, liquefactive or necrotic changes may occur. The history of the following case may illustrate this question as to the advisability of early operation:

CASE 1.—Mrs. S. (a farmer's wife), consulted me twelve years ago as to a growth in the uterus. Bimanual examination revealed a small myomatous growth in the fundus of the uterus, interstitial as to location. Operation was advised and refused. One year ago she returned with the tumor increased in size, and accompanied by great pain. Patient at this time consented to operation. Hysterectomy was performed and the tumor was found to have become carcinomatous. The patient died from general metastasis three months later. It is reasonable to surmise, at least, that her chances for recovery would have been vastly better had she consented to an operation at the first visit.

In the 140 consecutive cases, the ages of the patients at the time, recorded in decades, were as follows:

AGES

20 to 30	17 cases	or 12.1	per cent.
30 to 40	31 cases	or 22.1	per cent.
40 to 50	65 cases	or 46.4	per cent.
50 to 60	18 cases	or 12.8	per cent.
60 to 70	None		
70 to 80	1 case	or .7	per cent.

The youngest patient was 22, the oldest 76 years. Nineteen, or approximately 14.3 per cent., were unmarried. Sixty-four, or 38.6 per cent., were married, but never conceived. Fifty-nine, or 42.1 per cent., had had one or more children.

Dysmenorrhea was a prominent symptom in twenty-two cases, or 15 per cent.; menorrhagia in twenty-four cases, or 17 per cent.; metrorrhagia in thirty-one cases, or 22.1 per cent.

CLASSIFICATION AS TO LOCATION OF GROWTH IN CORPUS UTERI

Single	85 cases	or 60.7	per cent.
Multiple	55 cases	or 39.3	per cent.
Subperitoneal	41 cases	or 29.2	per cent.
Interstitial	25 cases	or 17.7	per cent.
Submucous	20 cases	or 14.2	per cent.
Intraligamentary	3 cases	or 2.1	per cent.

CHARACTER OF OPERATIONS

Abdominal hysterectomy	101 cases	or 79.2	per cent.
Vaginal hysterectomy	2 cases	or 1.4	per cent.
Abdominal myomectomy	26 cases	or 18.2	per cent.
Vaginal myomectomies	11 cases	or 7.8	per cent.

COMPLICATIONS

Cystic ovaries	34 cases	or 23.8	per cent.
Papilloma of ovary	1 case	or .7	per cent.
Ovarian cyst	6 cases	or 4.3	per cent.
Tubo-ovarian abscess	4 cases	or 2.7	per cent.
Adenocarcinoma of ovary	1 case	or .7	per cent.
Adenocarcinoma of uterus	2 cases	or 1.3	per cent.
Adenosarcoma	1 case	or .7	per cent.
Infected myoma	5 cases	or 3.5	per cent.
Degenerated myoma, cystic	2 cases	or 1.3	per cent.
Degenerated myoma, calcification	3 cases	or 2.1	per cent.
Pyosalpinx	5 cases	or 3.5	per cent.
Hydrosalpinx	1 case	or .7	per cent.
Gall-stones	2 cases	or 1.3	per cent.
Ventral hernia	1 case	or .7	per cent.
Inguinal hernia	1 case	or .7	per cent.
Salpingitis and ovaritis	4 cases	or 2.7	per cent.
Puerperal uterus	5 cases	or 3.5	per cent.
Cystic goiter	1 case	or .7	per cent.
Prolapse of uterus	3 cases	or 2.1	per cent.
Double uterus and double vagina	1 case	or .7	per cent.
Appendix removed (All showed pathologic changes.)	16 cases	or 11.3	per cent.
Phlebitis before operation	1 case	or .7	per cent.
Postoperative phlebitis in septic cases	4 cases	or 2.7	per cent.
Postoperative phlebitis in clean cases	4 cases	or 2.7	per cent.

* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

* From the Department of Obstetrics and Gynecology of St. Louis University School of Medicine.

FATALITIES

One patient died from shock, one from ileus, one from postoperative hemorrhage due to retraction of ovarian artery from point of ligation, one from peritonitis (a clean case), two from peritonitis (septic) present at time of operation.

Of the myomectomies, in one (woman pregnant) a subperitoneal fibroid occupied the lower anterior surface of the uterus, producing an enuresis and an obstruction to labor. It was removed by the abdominal route. The woman recovered from the operation, but miscarried eighteen days later. The removal of this growth was accompanied by some hemorrhage, but deep mattress suturing, rapidly applied, soon checked the flow of blood. The miscarriage was not attended by any complication.

In another case of myomectomy a recurrence of the myomatous growths came on twenty-one months later, and the patient submitted to hysterectomy. This patient was 36 years old, and was engaged to be married at the time of the first operation. Five subperitoneal fibroids were removed, and, as there was a marked retroversion, a Gilliam operation was done. At the second operation

Uterine myoma; initial incision made through neck of uterus.

the uterus was in the normal position. The right ovary was cystic. There were adhesions around the appendix and between the uterus and abdominal wall. The operation consisted of an abdominal hysterectomy, resection of right cystic ovary and appendectomy. On section of the specimen the uterus showed scars of the old myomectomy and several unabsorbed catgut ligatures. Patient made a good recovery.

At the time of the first operation careful search by a sense of touch was made and all fibrous growths, however small, were removed. This emphasizes the statement of Cullen, namely, that it is impossible in cases of multiple growths to be assured that, however careful one may be, some seemingly insignificant growth will not escape detection and later give trouble. This is particularly true in submucous or interstitial growths which, on account of their location, cannot be felt or seen.

This has its weight in the argument, hysterectomy versus myomectomy. The conservation of the uterus in the child-bearing age should influence us in coming to a decision as to the operation of choice, but in previously sterile women and in women who have passed the menopause, hysterectomy should be chosen. We are impressed with the fact, however, that a fibroid which is interstitial in character is a menace to pregnancy, and in women past 45 is dangerously prone to degeneration.

I had nine cases of phlebitis, four in clean cases and five in septic cases. In my earlier work along these lines I used the angiotribe in most of my hysterectomies, and frequently depended on its crushing qualities alone to control hemorrhage; no ligatures were used on the ovarian and uterine arteries. No postoperative hemorrhages followed, but in studying the histories of these cases, I was impressed with the number of cases of phlebitis following the use of the angiotribe. This was the chief cause for its abandonment, as I was fairly well convinced that the crushing of large areas of tissue by the broad jaws of this instrument so devitalized the structures as to induce the inflammatory changes in the veins; particularly was this true in the already septic cases.

In none of my operations was the ureter encountered, nor were the ureters previously catheterized to denote their presence. In two of the intraligamentary cases they were exposed, but they did not interfere with the operation.

TECHNIC OF ABDOMINAL HYSTERECTOMY

The method I employ is one that has been simplified by practice. All operations are performed with the patient in the Trendelenburg position. As soon as the abdomen has been opened, a careful survey determines the operation—myomectomy or hysterectomy. If the latter is chosen, the uterus is grasped with a suitable grasping forceps and drawn out as far as possible without using great force. Forceps with narrow curved jaws are applied on the broad ligaments on the opposite side of the operator, and the ovarian artery is ligated *en masse* with No. 2 catgut on the distal side of the locked instrument. After securing it thus, this ligation is sewed, by one or two additional stitches, into the remaining portion of the broad ligament, thus taking no chances of retraction of the artery between the layers of the broad ligament, as occurred in one fatal case.

The incision is continued downward till the uterine artery is approached, when this is doubly secured, as in the case of the ovarian artery. After the separation of the bladder and after a cuff has been cut from the posterior and lower uterine wall, the uterus is cut through on a level with a point just below the internal os. The uterine and ovarian arteries are then secured, as on the side first attacked, except in reverse order. This is the operation of Kelly, except as to the precaution of sewing the artery *in situ*.

When there is a suspicion that the tumor is more or less submucous as to location, and for fear that a leakage of infected material may soil the field of operation, the amputation is not done until after the incision through the broad ligament is made on the side next to the operator. In these cases, the second incision is made exactly in the same manner as the first, and the ovarian and uterine arteries are ligated in the same order. The canal of the stump is cauterized with 95 per cent. phenol neutralized with alcohol.

In these 140 cases I have resorted to drainage through the cervix only six times. If there is a suspicion of malignancy the cervix can be better removed after the uterine body has been excised. If it is necessary to drain, it is best done through the cul-de-sac of Douglas.

In two of these cases I encountered dense adhesions of omentum and bowel. The uterus was retroverted

V. 5
1911

and impacted in the pelvis. The tubes and ovaries were behind and under the displaced organ. The mode of procedure was first to make the initial incision through the neck of the uterus after the bladder had been pushed downward and the uterus pulled out from below upward, the bleeding vessels being ligated as they appeared. I believe this to be a good method inasmuch as there is less danger of tearing the rectum and small bowel and the division of adhesions is accomplished with more ease. Kelley believes that it is better to leave a portion of the posterior uterine wall adherent to the rectum than to endanger the rectal wall by forcible division.

In one case, I found a pregnant uterus with a subperitoneal fibroid with a broad pedicle located on the posterior wall, impacting the uterus in the pelvis. With some difficulty the uterus and tumor were dislodged, and no attempt was made to remove the tumor, for the reason that it seemed to dip far into the wall and I feared a perforation of the uterine wall, should I attempt its removal. The patient went on to full term and was successfully delivered of a living child. Several examinations made after the delivery show a marked decrease in the size of the growth, and as the patient complains of no discomfort nothing surgical has been done.

In the five puerperal cases all of the growths were submucous, except one subperitoneal tumor, which was enucleated, the operation being followed by a miscarriage. In the other four cases abortions had occurred, and were no doubt caused by the pressure of the growth. When the patients came to me they were more or less septic. In these cases the operation of choice was supravaginal amputation, for the reason that curettage is unsatisfactory in execution and morcellation is positively dangerous, while supravaginal amputation affords a clean and quick operation.

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ABSTRACT OF DISCUSSION

DR. ALBERT GOLDSPOHN, Chicago: I agree in the main with the ideas set forth by Dr. Dorsett, particularly that it is very desirable in younger females to preserve at least one ovary or a part sufficient to produce menstruation in a woman who has her uterus. It tends to her comfortable existence. It is not necessary to preserve both ovaries. Dr. Dorsett did not say anything about the tubes. From the illustration of his technic it is evident that he removes them. I speak of that because we do see some men who leave the tubes as an indifferent matter. I don't believe we should leave any tube in any woman after hysterectomy. An idle, useless Fallopian tube lined with mucous membrane I look on as a thing which is not innocent. We can remove the tubes so easily that I do not think a hysterectomy is complete without their removal. I would do that even if it required particular pains to accomplish it. Dr. Dorsett did not say how frequently he does supravaginal amputation. A woman with vaginal hysterectomy retains all the dangers of carcinoma of the uterus as if she had not had a hysterectomy. It is true that the majority of these women have not borne children and in that case the cervix is frequently not pathologic and is therefore not so likely to be the seat of origin of cancer in later years. At the same time, it does occur. As far as the Kelly suggestion is concerned, of detaching the bladder first and then cutting across the cervix, and turning the uterus backward and upward, that is, bringing out the cervix first, I have not found any advantage in such a method. It is supposed to be particularly advisable when the uterus is retroverted and badly adherent to the intestine and omentum. I can do better by detachment of the omentum from the fundus; and in most cases can separate the adherent uterus from parts attached to it, and if that cleavage line is not traceable we can more intelligently peel off the superficial coat of the body of the uterus and tumor under the eye where one can see with what one is dealing and the result will be more satisfactory than if an attempt is made to do the same thing in a bleeding wound.

DR. JOHN OSBORN POLAK, Brooklyn: The paper of Dr. Dorsett is right in line with some work that I have been doing. It is of interest to note that in forty-four of my myomectomies I have had to do a subsequent hysterectomy on twelve of these patients who came back for a recurrence of the fibroid condition. At the time of operation every visible or palpable mass was removed. I have come to feel that myomectomy rather excites the growth of the fibroid, by the inflammatory changes which take place in the tissues as the result of the operation. Certainly the rapidity with which some of these growths recur would indicate that that is more than a suggestion. In regard to removal of the ovaries, in an analysis of 132 hysterectomies which I presented to the American Gynecological Society a month ago, I made several deductions regarding resection of ovaries and leaving ovaries after hysterectomy. The result depends entirely on the condition of the ovary. An ovary that one has to resect and displace to save will give a painful ovary if left after removing the uterus. In this series I had the opportunity of comparing fifty cases in which complete extirpation was done against fifty cases in which one or both ovaries were left. I found that five of the resected ovaries presented distinct cystic changes, evidently due to disturbed circulation. Another point I might mention is that if an ovary is left it is better to leave the tube if it is apparently healthy, as there is less liability of disturbing the circulation in leaving the ovary plus the tube than if the tube is removed, leaving the ovary *in situ*. I should like to emphasize the importance of the point made by Dr. Dorsett of using the round and broad ligaments to keep the cervix high. Some of the worst results following hysterectomy are the prolapses of the vagina owing to defective technic. In regard to what Dr. Goldspohn said, supravaginal hysterectomy is preferable in the majority of cases because the stump can be brought higher in the pelvis, and if the precaution is taken of excising the mucous membrane of the cervix endocervicitis is avoided.

DR. W. B. DORSETT, St. Louis: The illustrations show the tubes *in situ* in patients under 45 years of age. I resect the ovary whenever I think it needs resection. If I find an ovary that is cystic I resect it so far back that there is only a little rim of it left. By leaving only a small portion you subserve Nature's plans in maintaining the secretion that is supposed to exist outside of the normal function of the ovary, or the usually accepted real function of the ovary. If I find the ovary much diseased, or impacted behind the uterus, I remove it. I always leave the cervix unless I have a suspicion that it is malignant.

THE ELIMINATION OF FEBRILE REACTIONS FOLLOWING INTRAVENOUS INJECTIONS OF SALVARSAN*

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The intravenous injection of salvarsan is by far the most desirable method of administration. The reactions which follow such injections have been thought to be due to an inherent toxicity of the drug, because many of the symptoms are similar to those noted in acute arsenical poisoning. The intensity of reaction has been noted to vary to a marked extent in different places, and no doubt the severe criticism of salvarsan which has been made by various observers has been due to the marked toxic manifestations of the drug noted by them.

In our experience the reactions have varied greatly at different times. The reactions consisted usually of a

* From the Hospital of the Rockefeller Institute for Medical Research, New York.

chill, followed by a rise of temperature at times as high as 105 F. During the fever there was nausea and vomiting, and a severe diarrhea often followed. Intense headache and violent lumbar pains were not infrequent. Occasionally, following a high fever, a marked albuminuria with many hyaline and granular casts was noted. At one time, nearly 50 per cent. of the treatments were followed by herpes of varying intensity. In tabetics, violent lightning pains for two to six hours following the injections were almost constantly noted. They were considered evidence of a Herxheimer reaction, as the pains were usually noted in the parts of the body most affected by the tabetic process. These pains and the herpes have both been invoked as evidences of a neurotropic action of salvarsan.

The discovery of a method of injection whereby all of these disagreeable and dangerous symptoms are excluded is an important advance. Such a method has been found by Wechselmann.[1] This discovery followed an observation that the reactions occurring in the women's wards were less severe than those in the men's wards. Further investigation showed that the sterilization of the salt solution was carried out longer in the former wards than in the latter. He then tried the effect of distilling and sterilizing the water for the saline used in the solution of the salvarsan immediately before the treatment. After adopting this technic, no further reactions were noted. In a later communication[2] he states that he has given more than 150 injections in his office without any fever occurring within four hours after treatment. On the other hand, there was frequently a slight fall in the temperature. He considers salvarsan less toxic than mercury.

For the past six weeks we have been using freshly distilled water for the preparation of the salvarsan and normal saline, and have confirmed Wechselmann's observations. The water, with a few exceptions noted below, has been distilled within twenty-four hours of the time of the treatment. Normal saline was also prepared at the same time from freshly distilled water, and both the water and saline filtered and immediately sterilized in the autoclave. Our technic varies slightly from Wechselmann's in that we use only distilled water for the solution of the salvarsan. With saline it is often difficult to obtain a clear alkaline solution without adding a great excess of sodium hydrate. When giving the treatment, after the needle is inserted in the vein, normal saline is first injected to make certain that no leakage is occurring about the needle. The injection of salvarsan is followed by about 20 c.c. saline to wash the salvarsan from the tubing and needle before it is withdrawn.

For the past five months we have been giving repeated small intravenous injections of salvarsan as a routine. As a rule, 0.2 gm. is injected each week until a total of at least 1 gm. is administered. In some cases nearly 2 gm. have been given in this way. These small injections were frequently followed by nearly as severe reactions as doses of 0.4 or 0.5 gm.

The table shows the striking difference between the old and new methods of preparation of the salvarsan.

A summary of the above shows twenty patients who received solutions prepared by both methods. A mouth temperature of 99 F. or over is considered a febrile reaction. With the former method there were forty-eight reactions in a total of fifty-three injections. With the freshly distilled water there were fifty-six injections, forty-five of which were followed by absolutely no rise of temperature or other unpleasant symptoms. Eleven treatments were followed by a temperature of 99 F. or over. Among these eleven reactions, four were only 99 F. In two with a temperature of 99.4 F. and 99.6 F., respectively, the water and saline were one week old, but both were autoclaved on the day of distillation of the water and the flasks in which they were preserved tightly capped. In three cases the water for the solution was fresh, but the saline used to precede and follow the salvarsan was some weeks old. One of these patients had a temperature of 99.6 F., and two of 100 F. Patients in another ward, who were treated with the same salvarsan solution and freshly prepared saline, had no reaction. One patient who had been previously running a slight fever had a temperature reaction of 100.2 F., and slight headache. In this instance both the water and saline had been opened twenty-four hours previously. The last reaction, 100.6 F., was in a patient who had previously been having an afternoon temperature of 100 F. In all instances with a temperature over 99 F., the reactions can be accounted for either by water or saline not absolutely fresh, or by a febrile condition of the patient. Still more striking was the absence in all the patients of nausea, vomiting, diarrhea, headache or

TABLE SHOWING DIFFERENCE IN REACTIONS AFTER INTRAVENOUS INJECTIONS OF SALVARSAN

Stage	— Old Distilled Water — No Reactions	Reactions	——— Freshly Distilled and Sterilized Water ——— No Reactions	Reactions	
Primary	..	..	1	1–100.2 F.	Water and saline opened twenty-four hours previously.
Secondary	..	..	2		
Secondary	..	2	3		
Secondary	..	1	2		
Secondary	..	5	2		
Secondary	..	1	4		
Secondary	..	4	3	1–100.6 F.	Temperature of 100 F. on the previous day.
Secondary	..	2	2		
Secondary	..	2	2		
Secondary	..	2	1		
Secondary	..	2	1	2– 99.0 F. 1– 99.6 F.	Water and saline one week old.
Tertiary	..	1	1		
Tertiary	..	4	2	1– 99.0 F. 1–100.6 F.	Water fresh, saline old.
Spinal cord syphilis	1	4	3		
Spinal cord syphilis	..	4	5		
Spinal cord syphilis	..	5	4	1– 99.6 F.	Water fresh, saline old.
Spinal cord syphilis	1	4	1		
Tabes	1*	2*	3		
Tabes	..	2*	1		
Tabes	2*	1	2	1– 99.0 F. 1– 99.4 F. 1–100.6 F.	No lightning pains. No pains. Water and saline one week old. Water fresh, saline old.
Total	5	48	45	11	

* Lightning pains.

1. Wechselmann: Deutsch. med. Wchnschr., 1911, xxxvii, 778.
2. Wechselmann: München. med. Wchnschr., 1911, lviii, 1510.

general malaise. The patients now take their regular meals within one hour from the time of treatment. Not one of the treatments has been followed by herpes. Using the old method in patients with tabes, seven out of eight treatments were followed by lightning pains, while with the freshly prepared water in a total of nine treatments not one has been followed by any pain.

An attempt was made to find if it was absolutely necessary to have the water and saline prepared on the day of treatment. Among the forty-five treatments without reactions, two were with water and saline two days old, one seven days old and three eighteen days old. In all of these instances the water and saline were autoclaved on the day on which the water was distilled and the containing flasks tightly stoppered. As two slight reactions were obtained with water similarly prepared seven days previously, however, it is probably safer always to use the water as fresh as possible.

The explanation of the febrile phenomenon is not entirely satisfactory. Wechselmann[2] thinks it is due to the fact that distilled water which has stood for some time contains saprophytic microorganisms. A certain amount of proteid matter is dissolved out of these into the water. This passes through the filter and when injected into the circulation gives rise to the febrile reaction.

Whatever may be the true explanation of the febrile reaction, the fact remains that the preparation of the salvarsan with freshly distilled and sterilized water eliminates practically all unfavorable toxic symptoms. With the toxic action of salvarsan eliminated, repeated doses can be safely given and, no doubt, more effectual results will follow its more thorough application.

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ARTHRITIC MUSCULAR ATROPHY *

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Recognition of the fact that injury or disease of joints is apt to be followed by atrophy of adjacent muscles, especially of the extensors above the joint, is said to date from the time of Hippocrates, but until the early part of the nineteenth century there was no serious attempt to explain why this atrophy occurred.

John Hunter spoke of it as being due to "sympathy," whatever that may have meant. In 1860, Brown-Séquard advanced the idea that atrophy following joint disease was due to reflex irritation acting through the vasomotor system. Sabourin, in 1873, attributed it to direct extension of inflammation from the diseased joint, while Vulpian was the first to suggest that it was due to reflex influences exerted on the trophic nerve centers in the spinal cord, which opinion was later supported by Charcot. Valtat and Dide, in 1877, studied the changes in the muscles following arthritis experimentally produced, while Raymond,[1] in 1890, furnished what appeared conclusive proof of the correctness of the reflex theory of Vulpian. This last author, after cutting in dogs the posterior roots of the lower lumbar and upper sacral nerves, on one side, set up in these animals arthritis in both knee-joints, by injections of nitrate of silver, the cautery, etc. He found that while on the side on which the posterior nerve roots were intact, muscular atrophy occurred in the usual way after the production of an arthritis, on the side on which the roots had been cut, the muscles either did not atrophy at all or only to a very slight extent. He explained this difference by assuming that, while on the sound side the influences arising from the injured knee were able to pass into the spinal cord through the posterior roots and to act on the trophic centers in the anterior horn, on the side of the cut roots this was impossible, hence the atrophy did not occur. In 1891, Duplay and Cazin repeated Valtat's experiments and showed that the change in the muscles was one of simple decrease in size of the fibers. Hoffa,[2] in 1892, repeated Raymond's experiments on dogs, with confirmatory results. While Klippel, in 1888, had reported some changes in the spinal cord in arthritic muscular atrophy, none of the other observers, previously mentioned, had been able to discover anything abnormal in either the spinal cord, the nerves, or the muscle-nerves. In 1898, Achard and Levy reported finding in this disease atrophy of the cells in the anterior horn of the spinal cord, while Mignot and Mally,[3] in 1900, found in each of eight dogs with experimental arthritis, a diminution in the number of cells in the anterior horn, throughout the lumbar portion of the spinal cord, on the side of the muscular atrophy, as compared with the number on the sound side. In his Paris thesis of 1900, Tossigny[4] gave an extended review of the subject, but presented nothing new, while O. Meyer,[5] in his inaugural dissertation at Greifswald, in 1902, brought forth the idea that atrophy is, at least sometimes, due to overstretching of the muscles, through effusion into the joint, and gave an account of some experiments which he had made, the result of which he thought confirmed this view of the matter.

Since the comprehensive review of the subject by Lorenz,[6] in Nothnagel's "System of Medicine" in 1904, no literature of importance has appeared. Several years ago I undertook to repeat the experiments of Raymond and to study, by the finer histologic methods which have come into use since Raymond's time, both the central and the peripheral nervous system, as well as the muscles of dogs kept for varying periods of time after operation.

The operation of laminectomy and cutting the posterior roots of the spinal nerves is one of some delicacy and involves considerable shock, besides being complicated by the difficulty of maintaining asepsis later.

It was soon found that only young dogs were suitable, as the laminectomy was more easily performed on them and the hemorrhage more readily controlled. Several of the older animals died shortly after the operation, while two of more suitable age succumbed to septic infection before muscular atrophy could be set up.

The material from seven dogs was ultimately utilized. In two of these, laminectomy was performed; the posterior roots of the last three lumbar and first three sacral nerves were cut and arthritis was set up in both knee-joints by the injection of a 25 per cent. solution of nitrate of silver. These animals were kept respectively twenty and sixty-eight days after the production of arthritis. In the other five dogs, arthritis was produced in one knee-joint and the animals were sacrificed after sixteen, twenty-one, thirty-two, sixty-two and seventy-eight days. In two of the latter cases the spinal cords were spoiled and could not be used, though the muscles and nerves were examined.

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

1. Raymond: Rev. de méd., 1890, p. 374.
2. Hoffa: Samml. klin. Vortr. (Volkman's), new series, No. 50.
3. Mignot et Mally: Arch. gén. de méd., 1900, ii, 296.
4. Tossigny: Thèse de Paris, 1900.
5. Meyer, O.: Inaugural Dissertation, Greifswald, 1902.
6. Lorenz, H.: Krankheiten der Muskeln, in Nothnagel's Spezielle Pathologie und Therapie, Wien, 1904

For study of the nerve-cells, Nissl's stain and toluidin blue were used. The cords were also studied by the Weigert and Marchi methods. For the muscles hematoxylin and eosin, Bismarck brown and Weigert's and Marchi's methods were used. The intramuscular nerves were stained by the method of Sihler.

In the animals in which the joints were injected without root-cutting, the diminution in size of the muscles on the extensor surface of the limb was apparent as soon as the inflammatory reaction following the irritant had subsided. In those animals which were kept for sixty-two and seventy-eight days, the contrast between the sound and the affected sides was very marked, in one case the difference in the circumference between the two thighs being as much as 6 cm.

Faradic irritability of the muscles was retained, though it was slightly reduced on the affected side. The change found in the muscles was one of simple reduction in size of the fibers, the space between them being greater than normal. The fibers preserved their striation, however, and no increase of muscle nuclei was noted. In some places near the inflamed joint there was slight round-cell infiltration. While the fine nerves within the muscles could be readily traced in the pieces prepared by Sihler's method, no pathologic change was found in them or in the nerve-endings. Neither did the peripheral nerves show any change by either the Weigert or the Marchi method.

In the laminectomized dogs, there was a decided difference between the circumferences of the two thighs, 2 cm. in one case and 1 cm. in the other, atrophy being more marked on the side of the intact roots. As the animals had become much emaciated, however, the muscle fibers were smaller than normal on both sides. The changes found were in general the same as those observed in the other dogs, and there was equal absence of change in the nerves. In the cases in which the posterior roots had been cut, ascending degeneration on one side of the spinal cord was made evident by both the Weigert and the Marchi methods, but no other change was found. In the plain arthritis cases, no pathologic change was disclosed. A careful examination of the whole lower part of the spinal cord by Nissl's method and by toluidin blue failed to show degenerated nerve-cells in any case. Particular attention was paid to the fourth and fifth lumbar segments, in the former of which Parhon[7] located the cells of origin of the anterior crural and obturator nerves, which supply the anterior muscles and the knee-joint, but not one cell showing axonal reaction could be found.

The large cells of the anterior horns were carefully counted in a very large number of sections and a marked difference in their numbers on the two sides, varying from 1.3 to over 7 per cent., was found. In the laminectomized dogs, the number of cells was greater on the side of the cut roots, while in the others it was greater on the side of the arthritis and the muscular atrophy. The sections were carefully marked by a hair on one side and were recorded when they were taken. A further count of *all* the anterior horn-cells gave figures essentially the same. I was unable to study Mignot and Mally's results in the original, but had to depend on an abstract, hence I do not know just what figures they found or what precautions they took. Is it not possible that there may be in normal cases a difference in the number of cells on the two sides of the spinal cord? I am not familiar with any investigations directly bearing on this subject. Professor Van Gehuchten, speaking of some studies of the spinal cord in dogs with experimental arthritis by Nissl's method, said that he had been unable to find any changes in the nerve-cells; Korniloff, of Moscow, had a similar experience. In the preparations studied, there was not one cell in process of degeneration, although my material was from dogs which had died at different times. It would seem that if the cells disappeared as a result of some irritation through the nerve fibers from the diseased joint, they must first undergo a degenerative process and at least a few degenerated cells should be found. The passage of degeneration from one neuron to another is entirely opposed to all previous experience in nervous pathology, and neither the nerves nor their posterior roots showed any degeneration. Charcot spoke of the influences from the inflamed joint as producing a sort of "inertia or stupor of the cellular elements," and others have assumed a so-called "dynamic" alteration in the cells of the anterior horn of the spinal cord. All of these expressions are rather indefinite and add nothing to our knowledge. While the reflex theory is not entirely satisfying, it must be acknowledged, however, that all experiments hitherto performed go to strengthen rather than to disprove it.

Lorenz, in his general considerations with regard to muscular atrophies, holds that for a muscle to maintain its nutrition in the first place the peripheral neuron must be intact; second, that there are no special trophic nerves as far as is known, and third, that the nerve-centers do not spontaneously exert a trophic influence, but must be stimulated from the periphery and from the center in order to do so. The cutting off of voluntary influences may thus result in diminution in size of the muscle, as in the atrophy sometimes observed after a cerebral lesion. On the whole, the muscular atrophy following joint disease or injury would seem to be due to the combination of several causes. In the first place, there is a tendency to keep the limb inactive in a more or less fixed position, in which the muscles are not only in disuse, but the habitual and necessary stimuli to the nerve-centers are more or less cut off from the nutrition and the muscle is apt to suffer. That immobilization alone may cause some wasting is well known. The right leg of a rabbit was put in a position of extension in a light plaster cast (with precautions against the exertion of pressure), and maintained in this position for nineteen days; on removal of the plaster, the muscles of the right thigh had undergone appreciable atrophy, there being a difference of 1.25 cm. in the circumference of the two sides. After being free ten days, the animal was using its leg normally again, but the difference in size persisted for some time.

In cases in which there is joint effusion, overstretching of the muscles and constant pressure may play a rôle, while impairment of the general nutrition may result in some cases, though why it does so more on one side than on the other is not clear. In this connection the question as to whether some toxic substance produced in the inflamed joint may act unfavorably on the muscles might be considered, but why this agent should attack a special group of muscles unless they offer a *locus minoris resistentiæ*, is difficult to understand, and we have no anatomic evidence of such action. Of the direct extension of inflammation from the joint we usually find no trace, though in some pieces of muscle from very near the joint, round-cell infiltration has been found when periarthritis has accompanied the arthritis. While the idea of reflex influences from the

7. Parhon et Goldstein: Jour. de neurol., 1902, p. 243.

V. 5 1911

inflamed joint acting on the nerve centers in the spinal cord may not satisfy us, we nevertheless cannot disregard it, neither can we consider it as proved that these influences are the cause of the atrophy of the muscles.

Each of the etiologic factors mentioned has at one time or other been put forward by an author of eminence as the determining cause. Why does the atrophy affect almost exclusively the extensor muscles? It is a suggestive fact that the nerves which supply the joints are branches of the same trunks from which the affected muscles draw their supply, or have their origin in the same region of the spinal cord. The muscular tonus of the quadriceps extensor cruris depends on impulses which are carried back to the spinal cord by the afferent fibers of the anterior crural and obturator nerves, which nerves include fibers from the knee-joint. In arthritic muscular atrophy there is a flabbiness and lack of tone of the extensor muscles, though the tonus is not all gone, for the knee-jerk is not lost and is even apt to be exaggerated. If the tonus depends in part on impulses arising from the synovial membrane of the knee-joint and these impulses are cut off, it is reasonable to suppose that the nutrition of the muscles will suffer.

As the matter stands, the evidence does not favor the idea of a unique cause as effective in all cases of arthritic muscular atrophy, but would indicate that the atrophy is the product of a number of different factors which may be responsible to different degrees in different cases.

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ADVISABILITY OF GOVERNMENT MEDICAL CONTROL OF THE HYGIENIC FACTORS OF THE WATERS OF THE GREAT LAKES*

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During the summer of 1907 a large passenger steamer from Chicago arrived at Buffalo with a number of patients with typhoid fever aboard, among whom deaths occurred. A physician[1] of the Buffalo Board of Health had charge of the investigation. It was revealed that the tank of the steamer had been filled with infected water, taken at some indefinite point on the long lake trip of over one thousand miles.

As a measure of future safety, it would have been of great value to know at what point the infected water was obtained, and who, if any one, was to blame. Under existing conditions of conflicting authority, it would be difficult to determine on whom the responsibility should be placed. The surgeon of the steamer, often a new and inexperienced graduate, appointed for the trip, could not be expected to know the sanitary character of the channels traversed. State authorities and boards of health would be equally at fault, and would clash as the steamer passed along the shores of many states.

Failure in the first attempt at disinfection of the large tank of the vessel, through the condensation of the steam utilized, held the great steamer from her regular trip. Subsequently she was allowed to proceed, with the provision that bottled water only should be used. The tank was subsequently disinfected with formaldehyd solution. This all entailed a large expense.

This incident brings up so many questions pertaining to the sanitation of the great lakes and adjoining waters, affecting the health, not only of the floating population of the lakes, but of the cities along their borders, that we at once see the need of special medical control in this connection.

Some central medical authority, which would have in its natural function the determination of the sanitary status of the bays, rivers and channels of the great lakes, from which the potable waters of these vessels may be obtained, would prevent such dangerous condition as that cited in the case of the steamer mentioned.

DANGER OF INFECTION TO CITIES FROM LAKE VESSELS

It is quite within the probabilities that a city along the line of lakes might be endangered by refuse thrown from a steamer. Some precaution should be observed as to the scattering of fecal matter at any point on the lakes.

As an instance, a steamer entering or approaching the port of Buffalo, passes within about a half mile above or up-current from the "new intake" of the Buffalo water-works, at the so-called "Emerald Channel." Without suitable authority and control, the pathologic filth of a vessel might be thoughtlessly thrown overboard at or near this point; it would float with the current to the intake and be pumped into the water-supply.

Numerous instances of this character might be cited.

INFLUENCE ON SANITATION OF THE CURRENTS OF THE LAKES AND RIVERS

In a paper which I read before the Rochester Academy of Science, discussing the subject of our lakes and rivers, I stated that the question of the influence of these currents on sanitation would seldom need to be considered if the population of the lakes remained as it was in the first half of the nineteenth century. The befoulment of our water-supplies through the emptying into them of the then limited refuse factors, sewage and excrement, would not have been sufficient to call special attention to the subject with the small population then existing.

However, with numerous cities of four or five hundred thousand or greater population lining their shores, the utilization of the waters of the great lakes and rivers of the country for potable purposes becomes an absolute necessity from which we cannot escape.

Through an extended and most interesting series of "Current Observations on Lake Erie and the Niagara River"[2] instituted in 1903 for the city of Buffalo, we know that these current factors are of unquestioned import so far as the health of the cities of the lakes is concerned. Had my report at that time been heeded, an immense financial saving would have been effected in the construction of a great, and at this time unnecessary,[3] new water-works system for the city of Buffalo, costing several millions of dollars. This subject of the influence of lake currents needs further investigation and could well be pursued under the control of a central medical body.

REQUIREMENTS TO PREVENT BEFOULMENT OF LAKE WATERS

The excessively rapid growth of the population surrounding the great lakes demands the prevention of the befoulment of this great system of waterways, and the subject should be immediately considered. We are at

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

1. Dr. Thomas B. Carpenter.

2. THE JOURNAL A. M. A., Sept. 3, 1910, p. 828.

3. See Report of Engineers of Chamber of Commerce, Buffalo, N. Y.

a pressing initial stage in the proceedings needed to organize the methods of control. In the great cities of Chicago, Detroit, Cleveland and Buffalo the instinctive need is felt of an intelligent answer as to how we shall best proceed to improve the present status and ward off impending disaster through the unwise sanitary methods now being followed.

WHAT CHICAGO HAS DONE

Chicago has made an attempt to solve the problem by digging its drainage canal, an attempt probably unwise, as we now look on it, and quite ineffectual for the reason that it cannot go on to a satisfactory termination under natural existing conditions. With the quantity of water taken from Lake Michigan at present it is insufficient to take care of the sewage output of this great city. The head and surroundings of the drainage canal are anything but sanitary, and are growing steadily worse from excess of sewage; the fermenting condition and foulness of the waters here are decidedly objectionable, and very far indeed from that state which future methods should permit. A minimum degree of forethought was given to the subject by the projectors and supporters who devised this great method for the future sanitation of so great and growing a city as Chicago; they did the best for their time, but the world had not progressed to a point where better knowledge places us to-day.

DANGER IN GREATER ABSTRACTION OF WATER FROM THE GREAT LAKES

The drain of the waters of the great lakes by such outlets as the drainage canal, the deepening of the channels of natural drainage without adequate compensation, as in the instances of the Detroit, St. Clair, Niagara and St. Lawrence rivers, which has been going on, possibly with a minimum of excess, for years, must be more carefully controlled, so that with the needs of navigation, which must not be excessive, the outlets will closely correspond in cross-section of discharge to the natural conditions heretofore existing. The conservation of the water is here quite as important as the conservation by the government of coal, lumber and other great commodities of life.

The careless denudation of the forests of the lake region adds to the seriousness of this question and indicates further how we have been stumbling along until aroused by a serious state of affairs. The low stage of water reported as now existing on the lakes teaches that natural laws must not be trifled with.

Sanitarily, our present method is suicide on a great scale, which will increase apace as the population grows or is radically changed to prevent the unwise distribution of our own disease-producing organisms. The forethought of the nation has been sleeping instead of attacking vigorously one of the most important subjects for the welfare of the future millions of citizens of the great lakes. Need we ask whether there is need of a central medical body to study and control the conditions (urgent as they are) affecting this important subject?

OUTLINE OF THE COURSE PURSUED IN THE PAST AND AT PRESENT

1. A small community of settlers locates on a large lake of pure water and takes its potable water from the lake, and also utilizes the lake for its refuse drainage.

2. The community becomes a village. The waters of the lake near shore become foul and the potable water-supply is naturally taken farther from shore.

3. The village becomes a city; a large increase in potable supply is needed; sewage drained into the lake has befouled the water so that a tunnel conduit is built to a point thought to be safe from shore drainage.

4. The large city produces increased sewage; there is greater area of disseminated lake sewage; tunnels are made at enormous expense, extended miles into the lake.

5. Continued growth of cities, the pathologic products of non-epidemic sewage, colon and typhoid bacilli, produce a high continuous percentage principally of typhoid fever from the now thoroughly contaminated lake. There is not an epidemic of typhoid but a constant increase, as in many towns along the line of the lakes.

THE ACTUAL CONDITIONS

At the city of Cleveland, Ohio, for instance, there has been a great increase in population, with increased sewage thrown into the source of the potable water-supply. The subaqueous tunnels were extended mile on mile only to find time and again the contamination of the source of supply.

The city of Rochester, N. Y., is contemplating a more scientific (?) discharge of its sewage into Lake Ontario than by the present simple drainage into the "low level" water of the Genesee River, which produces the unpleasant effect of an open sewer. As stated to me, it is contemplated to extend a discharge tunnel to a distance into the lake and begin the befouling of the lake waters, which must affect the welfare of the surrounding communities. The condition of the navigable outlet at the mouth of the Genesee River, where the sewage of the city collects at present, is nauseating to the great body of tourists arriving and departing on the lake and St. Lawrence steamers at Charlotte during the summer months.

Thus we find that a more or less sanitarily chaotic state exists at all the centers of population along the great lakes and rivers, calling for immediate consideration at the hands of an authoritatively constituted central medical body in respect to their control and the betterment of conditions.

THE CONTROLLING BODY MUST BE MEDICAL

From the nature of the problem, varying as it does, from the bacteriologically medical to engineering of a sanitary nature, associated with the lake factors of our lake cities, the central control body should necessarily be medical. The medical problem must go hand in hand with the engineering, and yet control it, if the former does not precede the latter, as was necessary at Panama. We now know that all the engineering ability of the world could not have constructed the canal unless medical science preceded it.

GREAT LAKES SANITATION AN ARGUMENT FOR A NATIONAL BOARD OF HEALTH

The mere discussion of this great subject strongly emphasizes that it is an argument for the immediate organization of a national board of health. Let the several states take care of the matters of importance within their borders, such as the control of streams and rivers that properly come under state jurisdiction. When, however, the health factors of the great rivers of the country, the Mississippi, its tributaries, the Missouri and others, intertwining among many states, are at issue, a national central medical controlling body, which will assist, guide and not conflict with, state authority, is needed.

With the peculiar condition existing along the great lakes, differing from any other in the world in their

V. 5 1911

magnitude and general characteristics, comprising portions of the states of Wisconsin, Minnesota, Michigan, Ohio, Pennsylvania and New York, with Canada on the north requiring international consideration, the force of the argument in favor of a national board of health is overwhelming.

I would reiterate, if my voice could avail, that there is no question more insistingly pressing for adjustment than this need of the national government. Can the successful administration of President Taft add—I will not say glory—but more wisdom to its laurels than by seeing inaugurated and in working order this valuable and absolutely necessary medical branch?

I may mention the deaths of our carelessly sacrificed soldiers at Chickamauga and other camps and compare their condition with that produced by the utilization of our even then well-known modern bacteriologic methods by the wise Japanese in their war with Russia, and the wonderful work of our respected and revered former president of this Association, Colonel Gorgas, in Cuba and at Panama. No events in the history of medicine so well demonstrate that we now possess the knowledge, and it is hoped that the wisdom of our national legislators may enable it to be applied without stint to meet and overcome the great problems associated with the sanitation of the great lakes.

OUTLINE OF THE CURE

As it has seemed necessary to present many features connected with the sanitation of the lakes to illustrate clearly the need of a central medical body of control, it will be at least in keeping to suggest what has been in my mind for many years as an outline of the course to pursue in effecting a radical cure of the chronic progressive malady of the great lakes.

It must consist in the purification of the sewage or refuse from any source before being deposited in the waters of the lakes, which would, if it were immediately practicable, at once end all controversy. Or, were it possible to absolutely prevent the deposition of any such material in our lakes and rivers, we would have accomplished the same result.

I assume that the silt or natural material always found at the bottom of the lakes, which is held in suspension in the water in stormy weather, is non-pathogenic and need not be considered a factor in the present controversy. It can always be removed by simple filtration in the home if considered esthetically objectionable. It does not produce specific disease.

We must also continue to use our already provided intakes as the source of supply, assuming that the intake water is not contaminated by infective seepage before it reaches the distributing point or reservoir.

INITIAL COURSE TO PURSUE

It would seem, then, that the plausible initial course to pursue, so far as the immediate prevention of disease is concerned, is to prevent the further pathologic infection of lake waters. Specific infection must proceed from a disease-producing focus, as a patient with cholera, typhoid or some zymotic disease.

Eight years ago in a paper presented to a college bulletin,[4] I wrote as follows:

> Let all material from patients with enteric disease be thoroughly disinfected before being disposed of through the sewers. It will be contended that it is not practical. Let us figure a little. There were 113 deaths from typhoid fever (in Buffalo) in 1902 (the exact number per month was given). Now I submit that it is within the simple possibilities of medical practice and control to prevent the material coming from the number of cases represented by these deaths, all enteric, from gaining access to the sewers of our city. For the security of the cities of Tonawanda, Niagara Falls and others now contaminated in their water-supplies by the sewage of Buffalo, it should be done.

Since then many have advocated a similar course. There should be added measures of sanitary engineering which will effectually prevent access of infection to the lake waters from any source.

HOW WILL THE PREVENTION OF REPOLLMENT BE BROUGHT ABOUT?

Beginning on a small scale, it will broaden to a great educational factor, which will ultimately reach from the smallest hamlet of any brook, stream or river, tributary of the great lakes, to the bedside of the sick in the homes and hospitals of the cities bordering the lakes. It will continue until every reasoning being is taught to understand, appreciate and demonstrate by his acts that he may become a personal factor of great importance in influencing the health and welfare of his fellowman.

Remember that never before in history has it been possible to see with prospective certainty a sanitary condition such as we hope for; it would not have been possible prior to the conception of a Lister, the labors of a Pasteur, a Tyndall and a Koch, and the army of bacteriologic investigators of the world.

In the attainment of this ideal sanitary state we shall be benefiting the present generation, while we are or should be building for the future, not of decades, as in the past, but of centuries to come.

It is indeed a subject so great as to require the control and management of a central governmental medical body.

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4. Alpha Omega Delta Bulletin, University of Buffalo, August, 1903.

IMMUNO-DIAGNOSTICS IN INTERNAL MEDICINE*

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In the presence of infection certain reaction products are developed in the infected individual. Their development is excited by the infective bacteria. This immunizing process may be due to the action of the cells or of the fluids or of both. If the process more particularly affects the cells the result is termed cellular immunity; if it affects the fluids, humoral immunity. Some of the substances formed are protective to the individual; others apparently have little demonstrable protective influence, and still others sensitize the subject. The substances formed in humoral immunity may be divided into: (1) agglutinins, (2) precipitins, (3) complement-binding substances and (4) opsonins.

The demonstration of these substances forms the basis of the serum reactions which have attained so much importance in recent years. The detection of agglutinins attained its greatest importance in the diagnosis of infections caused by typhoid, paratyphoid, and colon bacilli, in which they are specific. Strictly speaking, the latter term must be used in a relative sense, as

* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

normal serums possess a certain amount of agglutinins and it is only their demonstration in relatively high dilution that renders the reaction specific.

The complement-binding principle of Bordet has received many applications to diagnosis, the most important of which is the serum diagnosis of syphilis. While numerous modifications of this method have been proposed, the original method of Wassermann still remains the most reliable. While the test requires for its proper performance the skill of a trained laboratory worker, the interpretation of the results should always be in the hands of the clinician, who should possess for this purpose a broad knowledge of immuno-diagnostics. This test is not only useful for the initial diagnosis of syphilis or for determining the presence of that disease in doubtful cases, but it has many applications as an aid to prognosis and treatment during the course of the affection.

It is quite remarkable that this reaction is not more frequently employed in controlling the treatment and management of syphilitics. One of the strongest claims for the specificity of salvarsan was the fact that it converted positive Wassermann reactions into negative ones. I am fully convinced that if syphilitics were properly managed in this age, serious recurrences and parasyphilitic diseases would be reduced to a minimum.

However, when used to control the treatment of syphilitics, this reaction should be properly understood. One negative reaction does not mean that the patient has been cured of syphilis. This, unfortunately, has been considered sufficient, especially since the introduction of salvarsan. Just how often a patient should be examined after giving a negative reaction will of necessity remain more or less speculative. In the first year I should not regard a negative reaction as an indication to suspend treatment, but I should wish to know by an occasional examination, say every other three months, whether the reaction was still negative; in other words, whether the treatment was being pushed sufficiently. This would apply equally in the second year, with but few and short intermissions of treatment. The intermissions might be lengthened in the third and fourth years. Every time the reaction is found it means, as pointed out in my first paper,[1] active syphilis, and calls for specific treatment. When the reaction persists under treatment over an indefinite period, it means active lues with all its possibilities and its resistance to treatment.

Passing over the various applications of this and similar principles to the diagnosis of such diseases as echinococcus infection, cancer, etc., I wish to take up the consideration of the diagnosis of tuberculosis by means of immuno-reactions and particularly by an application of the complement-binding principle.

Interest in the tuberculin reaction has been materially increased since the discovery of Pirquet, who found that individuals who had once suffered from a tuberculous infection or were at the time affected with tuberculosis, would react locally to the application of Old Tuberculin by the method of vaccination. This reaction is the first example of the use of such immuno-diagnostic methods for the diagnosis of tuberculosis. Following this discovery of Pirquet, a variety of vaccination methods have been devised, such as vaccination in the conjunctiva, hence the ophthalmic reaction, the percutaneous method, etc.

In regard to the subcutaneous reaction, some interesting observations were published by Franz. He found, on examining 400 men of a Bosnia regiment which came from a tuberculous district and whose members were in the first year of the service, that 61 per cent. reacted positively to Old Tuberculin. He examined a Hungarian regiment from a section with little tuberculosis and found that 38 per cent. of them gave positive results. Only a small number of the reacting individuals were demonstrably tuberculous, while a number of the non-reacting individuals were tuberculous. While these statistics might argue strongly against the specificity of the tuberculin subcutaneous reaction, there is no doubt of its value in suspected tuberculous cases in the hands of competent observers. We may say that whatever the subcutaneous method lacks in decisive diagnostic value for tuberculosis, the other methods do not possess; notwithstanding this, great claims are made for the efficiency of the ophthalmic reaction in active tuberculosis. There is, likewise, no doubt of its being a valuable aid in the diagnosis of tuberculosis; that it is not a decisive differential diagnostic recourse is generally recognized.

The skin reaction of Pirquet is a specific tuberculin reaction, but the tuberculous process may have healed out years before; as a consequence, this test is of little value in diagnosing an active process, except during infancy, although a strong reaction may at times lend additional weight to a diagnosis.

The occasional unfavorable effects of the subcutaneous injection of Old Tuberculin, together with the uncertain value of tuberculin reactions, show the desirability of a test devoid of these two objections. Efforts have already been made in this direction. They have been directed toward the demonstration of specific substances in the blood of tuberculous patients. The antibodies that have been investigated are agglutinins and complement-binding substances. Arloing and Courmont were the first to report on agglutinins in tuberculous cases. They found that the serum and serous exudates of many tuberculous patients agglutinated tubercle bacilli. This serum test has not been much tried out, evidently because it has fallen short of tuberculin reactions in simplicity and results.

Bordet, in his studies of Pfeiffer's phenomenon, discovered a new principle in immunity, namely, that of complement fixation. He was able to show by an indirect method, in which a hemolytic system was employed, the presence of complement-binding antibodies.

By means of this method he found that the blood of guinea-pigs which had been immunized with killed tubercle bacilli contained an antibody that would unite with an emulsion of tubercle bacilli as antigen and bind complement.

The discovery of Bordet opened up a great field for investigation into the presence of antibodies in body fluids by this method, and from this investigation the syphilis reaction ultimately developed.

Wassermann and Bruck investigated extracts of tuberculous tissue for tuberculin and antituberculin and found both. They believed that there existed a direct association between tuberculin treatment and antituberculin in the blood of tuberculous patients. They observed that tuberculous individuals who had no complement-binding antibodies reacted strongly to tuberculin, while those that had them failed to do so. From this, Wassermann originated an ingenious theory in explanation of the tuberculin reaction. He asserted that when antituberculin was present, it neutralized injected tuberculin and consequently no reaction occurred. If it was not present the circulating injected tuberculin

1. Butler: Serum Diagnosis of Syphilis, New York Med. Jour., Nov. 30, 1907.

V. 57 1911

was attracted into the diseased focus by antituberculin, with which it united and took up complement, thus causing local congestion and the general reaction.

Wassermann's and Bruck's experiments were confirmed by Lüdke and Citron; other workers, however, were unable to do so. Weil and Strauss, Czastka, Wolff-Eisner and Ascher, Cohn, and Butler and Mefford were unable to find any parallelism between complement-binding antibodies and tuberculin reactions, or between opsonins and the latter. All seem agreed, however, that they were able in a considerable number of cases to show complement-binding antibodies in the serum of tuberculous patients.

In association with my assistants, Drs. William E. Putz and Nora Johnson, I have undertaken an investigation into the serum diagnosis of tuberculosis on the basis of complement deviation. The majority of the patients were selected from the second and third stages of the disease, including, however, a number of suspected cases.

The technic employed in this work is that used for complement-deviation reactions. For antigens, the various tuberculins were used, including bacilli emulsion. Old human tuberculin was chiefly used. My previous experiences with it were not satisfactory; in fact, its action at times was so erratic as to raise the question of specificity of the reaction.

To avoid this difficulty in subsequent experiments we used human bacilli emulsion as antigen. It is necessary to titrate it carefully and also to repeat titrations before each test in order that it shall not be used in more than half the amount of inhibiting quantities. We also used bovine bacilli emulsion, titrating it in the same manner.

The serums are obtained in the usual way and inactivated to 56 C. for one-half hour. This is absolutely essential, as we convinced ourselves that active serums could not be used for this reaction. And as a matter of fact, the original reaction calls for inactivation. Active serums frequently contain anticomplementary substances. They may show inhibiting properties without the antigen. In the presence of antigen this may be increased evidently from a summation of inhibiting factors.

In regard to the employment of active serums for their complement, we can also state from experience that the content in complement of different serums is variable and absolutely unsuitable for the reaction.

In our first examinations we put through three different tests with all serums. In the first the serums were inactivated and guinea-pig serum added for complement. In the second the serums were not inactivated, but fresh guinea-pig serum was also added. In the third the serums were used in active state, but no additional complement was used.

We found that the first series would work out satisfactorily, the second series was erratic on account of anticomplementary substances, above referred to, and the third series showed little or no hemolysis in practically all tubes.

Fresh guinea-pig serum was used as complement and rabbit antisheep amboceptor and sheep's corpuscles were employed as the hemolytic system. Emory speaks of non-tuberculous serums anchoring complement in the presence of bacilli emulsion, the chief difference between non-tuberculous and tuberculous serums being in the latter absorbing complement in shorter time. We are not able to confirm this observation

The protocol of a reaction would read as follows:

T. B. Bacilli Emulsion	Patient's Serum	Guinea-Pig Serum	Anti-Sheep Amboceptor	Sheep Corpuscles, 5% Suspension	Hemolysis?
0.05	0.1	0.1	0.002	1	No
0.05	0.2	0.1	0.002	1	No
0.025	0.1	0.1	0.002	1	No
0.025	0.2	0.1	0.002	1	No
0.05	...	0.1	0.002	1	Yes
0.025	...	0.1	0.002	1	Yes
....	0.4	0.1	0.002	1	Yes

The quantities of antigen and amboceptor employed are, of course, variable and depend entirely on their strength. It is necessary to titrate the antigen and amboceptor before each test. Therefore, the above is simply a diagrammatic representation of the amounts used.

The amboceptor should be used in twice the strength sufficient to hemolyze the corpuscles in from fifteen to twenty minutes.

In making the reaction, the tubes must be closely watched after being finally placed in an incubator. A reading should be made as soon as the controls on the hemolytic system, tuberculin and a few known controls hemolyze. The degree of inhibition of hemolysis varies from 1 to 4. Eventually in practically all instances the hemolysis will be complete, but the delay in hemolysis with tuberculous serums is striking in contrast to the promptness with which the controls hemolyze.

We examined the serums of 100 cases. Sixty-five of these were tuberculous or suspects. The remainder were control cases, consisting chiefly of acute infections, as pneumonia, erysipelas, typhoid fever, catarrhal jaundice, influenza, etc. The patients from whom the specimens of blood were obtained were in the tuberculous department and medical wards of the Cook County Hospital and in my Willard Hospital clinic.

Of the tuberculous cases, 72 per cent. gave a positive reaction with human tubercle bacilli emulsion as antigen and 23 per cent. gave a positive result with bovine emulsion as antigen; in only one instance did we get a reaction with bovine emulsion and not with human. Of the thirty-five controls, three gave a reaction with human tubercle bacilli emulsion. One of them was a pneumonia, another an influenza and the third case was one of rheumatism. One control gave a reaction with the bovine emulsion.

In one case of cancer and one of chronic nephritis, the heated serums as well as the inactivated serums with antigen inhibited hemolysis to some extent. This is an experience, above referred to, that we frequently observed with active serums in general and not infrequently in cancer serums which had been inactivated.

In view of the first experiences with the lues reaction, we have every reason to feel encouraged and to believe that this reaction will be brought to a high degree of efficiency in the diagnosis of tuberculosis.

3220 West Jackson Boulevard.

ABSTRACT OF DISCUSSION

DR. F. M. POTTENGER, Monrovia, Cal.: It is very interesting to note the difference in the attitude of both the profession and laymen toward the two diseases, syphilis and tuberculosis. If a Wassermann is found on a patient he is willing, and is at once advised to have treatment for syphilis. If a positive tuberculin test is found, in the absence of clinical symptoms, we simply say that an infection is present, but as a rule take no steps to cure it. I believe that the time will soon come and is now almost here when the treatment of tuberculosis will consist in hunting out these early infections and treat-

ing them without delay. We know that practically every child is infected with tuberculosis before his fifteenth year. If these cases were sought out at this time they could easily be healed and the healing would result, according to animal experimentation, in a considerable degree of immunity, which would protect the patient in after years. I believe the future cure of tuberculosis will consist in early diagnosis and early treatment and that it will fall into the hands of those who treat children's diseases. If we are successful in our efforts to cure tuberculosis we must employ every means possible to diagnose and treat the disease early. I hope that Dr. Butler's method will be able to show definitely the presence or absence of active tuberculosis. If so it will be a great advance.

DR. WILLIAM J. BUTLER, Chicago: In the employment of the tuberculin reactions, with the exception of the subcutaneous test, we should remember that they are not decisive diagnostic tests for active tuberculosis. We can also say that the subcutaneous test, where positive, is not decisive unless we can demonstrate evidences of activity in the suspected focus of infection. The statistics of Franz, above cited, as well as personal experience, substantiate the latter statement. Individuals with healed-out foci of tuberculosis may react positively to any method of inoculation with tuberculin. Under these conditions a positive reaction would not mean active tuberculosis and would not therefore call for treatment. In view of the fact that the tuberculin reactions are not decisive differential diagnostic measures, except under the conditions above mentioned, it is hoped that the investigations into the antibody content of the blood during an active immunizing process, that is, active tuberculosis, may help to dispel the present uncertainties.

NEW CLINICAL VALUES IN THE TREATMENT OF THE GASTRIC NEUROSES *

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The nervous dyspeptic has ever been a joy to the quack, the *bête noire* of the honest surgeon and internist, and a mystery to all three. Some have treated him as a hypochondriac, others so seriously as vainly to explore his interior, and yet others have sought to enfold him in that ample but threadbare diagnostic cloak which we term neurasthenia. He has been sanguinely drugged by some, abandoned as hopeless by others, and passed from hand to hand until travelling has become a fixed habit of the well to do of his species.

Those who have read the delightful lectures of Louis Bourget will recall his deliciously satirical yet true picture of the extreme form of this ailment. We also have encountered the patient with the notebook which by its copious entries of intimate yet trivial events so well expresses the vicious introspection of the unfortunate autobiographist. We have all listlessly read the distinguished names appended to his over-growing collection of prescriptions, the headings of which may constitute a complete list of continental spas.

This extreme type which even Bourget speaks of hopelessly as *diese unheilbare Krankengruppe* is fortunately the exception, and between this and the trivial and transient varieties one finds that great group of pronounced dyspeptics who represent 70 per cent. of all cases consulting the gastrologist.

No ailment is more protean in its manifestations, and because of this fact and an entire misconception of the underlying causes, its victims have in the past too generally suffered from overtreatment, mistaken treatment or absolute neglect, according to the attitude, point of view or therapeutic bias of the physician consulted.

Nervous dyspepsia manifests itself through various disturbances of the nervous mechanism of ingestion and digestion. It is essentially functional in character, concerns both secretory and motor activities, and may represent either excitation or depression of function.

Ingestion and digestion are dominated and controlled by the nervous system and a modern writer reminds us of the fact that ingestion alone demands the efficient centrifugal activity of the trigeminus, glossopharyngeus and hypoglossus, and the centripetal activity, integrity, and exact coordination of centers located in the optic thalamus, rhomboid fossa, corpora quadrigemina and anterior frontal convolutions.

The sensory and motor functions of the stomach demand not only the efficient and harmonious action of both vagus and sympathetic, but also the aid of those special senses so highly developed in the gourmand.

In the presence of malnutrition, of depressed or submerged vitality, congenital or acquired, the nervous system must suffer and complain, and proper and sufficient nutriment and efficient metabolism are indispensable to the proper correlation and transmission of those nervous impulses indispensable to normal digestion.

If then we regard the predominant type of so-called gastric neurosis as merely one expression of congenitally deficient structure and unstable function, demanding, yet always tending to depart from, a high level of nutrition, we obtain a rational explanation of its diverse relationships, bizarre manifestations and resistance to empirical treatment. We understand the successes of psychotherapists like DuBois who combine wholesome advice and proper suggestion with the upbuilding of nutrition and we cease to marvel at the good effect of rest-cures, instituted under the inadequate but satisfying diagnosis of neurasthenia.

An understanding of fundamental conditions permits a proper differentiation of cases, rational prognosis and effective therapy.

In my opinion the gastric neuroses depend not wholly on one but on three factors which may be placed thus in the order of their importance and are for the most part seen in combination:

1. Asthenia universalis congenita.—By far the most frequent primary cause.

2. Chronic starvation.—Almost invariably associated with the asthenic cases but adequate as a primary cause.

3. Pure psychoneurosis.—A relatively rare factor.

Asthenia universalis congenita has been described by Prof. Bernard Stiller of Budapest in a remarkable monograph entitled "Die asthenische Konstitutionskrankheit."

In a masterly discussion he shows the general depression of vital functions and the tendency to psychoneuroses and chronic malnutrition characteristic of the condition. He asserts the almost invariable coincidence of visceral ptoses and gastric atony with slender bones, a loose costal belt, an unusually movable or floating tenth rib and a tendency to obstipation. He emphasizes the importance of the tendency to rapid loss of weight under adverse conditions, and the poor resistance to acute ailments and major surgery and thus, from old iron, welds link by link a new diagnostic and therapeutic chain.

Such individuals when at their best are usually alert and energetic, but are easily rendered psychasthenic, inclined to go beyond their strength, imaginative, emotional and impressionable, and in them we find present every element necessary to the development of a gastric neurosis under certain all too common conditions.

* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911

V. 5
1911

The second cause, chronic starvation, is intimately connected both with the asthenic habitus and to a less degree with the cases classed as psychoneuroses.

Patients suffering from digestive disturbance seek to eliminate the supposedly injurious foods or to pursue one of the faddish fasting-cures, and by this personal adverse selection aided by injurious lay suggestion, the unfortunate victim is reduced to an insufficient diet or one so exclusive as to be equally injurious.

The following brief abstract of cases will serve to illustrate these points:

CASE 1.—*Congenital asthenia, starvation, exclusive diet.*—A young married woman, ailing for eight months, bedridden, mother of four children, believed to be fatally ill with tuberculosis, presented a slight daily intermittent fever, extreme weakness and emaciation, and a marked anemia of the secondary type. The most searching examination failed to reveal any localized lesion.

Slight postinfluenzal indigestion and a foolish friend had led her to adopt an exclusive diet of meat and hot water eighteen months before.

The stigmata of congenital asthenia, including nephroptosis and gastroptosis with atony, were well marked, but prolonged rest, isolation, and a mixed diet brought about a rapid gain of 40 pounds and complete and permanent recovery.

CASE 2.—*Starvation.*—A man, aged 40, complained of constant indigestion, "nervous exhaustion," progressive loss of weight (25 pounds) and insomnia. Solid food had been progressively eliminated from his diet and many meals consisted of but a few swallows of milk and buttermilk.

Rest, absolute reassurance after a complete examination, and six liberal feedings daily restored his previous weight, cured his so-called "nervous exhaustion," and permanently removed all signs of digestive disturbance.

CASE 3.—*Congenital asthenia, starvation, profound neurasthenia.*—A professional man, aged 42, and a typical neurasthenic patient of the asthenic habitus, was "desperate" and "driven to extremities," by flatulence, insomnia and chronic obstipation.

Absolutely no signs of organic disease were revealed by a most thorough examination. Under rest, reassurance, six feedings daily and a seventh at midnight if awake, without special limitation as to foods, his recovery was prompt and permanent, his weight increasing 35 pounds.

CASE 4.—*Congenital asthenia, self-starvation, simulated gastric ulcer, hysteria (anorexia nervosa).*—A young girl was admitted, apparently *in extremis* from repeated gastric hemorrhages, and extreme gastric intolerance. She had retained neither food nor water for the preceding seventy-two hours. Emaciation was excessive, physical weakness extreme, and the asthenic habitus typically shown. There was the usual movable kidney, a marked gastroptosis, and flabby abdominal muscles.

Examination failed to confirm the diagnosis of gastric ulcer. The girl had first fasted because of postinfluenzal indigestion, had become weak, anemic, and hysterical, had been repeatedly examined by various physicians and had heard and read much of gastric ulcer.

Her hemorrhages were spurious. No one had ever been present when blood was vomited and the stools were blood-free. No localized tenderness existed, yet pain, both spontaneous and induced by pressure, could be developed any and everywhere by suggestion.

Food or water was *instantly* returned and throughout her illness her vomiting bore no definite time relation to the digestive process. Reassurance, rest, isolation and suggestion, reinforced at the onset by the threat of gavage, enabled us to give six nutritious feedings daily after the first forty-eight hours. The girl gained for the first thirty days over a pound a day and has remained symptomless for five years.

CASE 5.—*"Malade imaginaire."*—A stout, ruddy policeman, a peripatetic hypochondriac, accustomed to starve and gorge himself alternately, presented symptoms of gastric neurosis. His stomach was normal in size, position and secretions. The general examination was absolutely negative.

He was refused treatment with the emphatic assurance that no excuse for it existed. Leaving in anger, he next visited a notorious *x*-ray quack, received one *x*-ray exposure and a positive assurance that it had cured him, paid a fee of $100, and was healed.

Such cases could be indefinitely multiplied and would include the simple achylias, many instances in which a diagnosis of tuberculosis, gastric or duodenal ulcer, gallstones, appendicitis and even cancer had been made, but these suffice to show the effect of constitutional weakness, starvation and pure imagination in producing this ailment.

TREATMENT

Cases of misdirected imagination need suggestion in its strongest form and little more, as is illustrated by Case 5, but the more common types demand and merit careful consideration for their disease is not imaginary and their suffering is real and at times extreme.

Treatment should properly commence in childhood, but this phase cannot receive adequate consideration within the limits of this paper.

Under proper conditions even the severest types in the adult may be entirely relieved, but these demand an expenditure of considerable time and money on the part of the patient, and skill and tact on the part of the physician and nurse.

Treatment of the ordinary case in the adult must be based on the fundamental proposition that the patient is suffering from impaired nutrition which affects practically every organ and function of the body, and from mechanical displacements of the abdominal viscera which under such conditions assume a serious aspect, though usually symptomless when the nutrition is improved.

One seeks, therefore, to obtain for them such rest and improved nutrition as can usually be had only in a hospital and with the services of a special nurse, and in most cases a persistent psychotherapy must be maintained because of the accompanying psychasthenia.

Every attempt at cure must be initiated by a thorough examination of the entire body and especially of the stomach, and a positive and emphatic statement as to the negative or trivial findings obtained.

In the milder cases the patients, and especially such as lack the asthenic basis, may be treated as office patients or in the hospital under ward nurses, but many failures or only temporary cures must be anticipated under such conditions.

The most difficult problem is presented by the poor asthenic who cannot follow the ideal treatment. Some may be greatly benefited by proper instructions as to diet and rest, a simple explanation of the nature of their trouble and the simple procedures indicated.

The *x*-ray examination readily demonstrates the fact that gastric atony and the vertical fish-hook stomach accompany nearly all of the gastric neuroses, and that in active cases emptying of the abnormally placed viscus is delayed from one or both of two causes — first, atony; second, spasm of the pylorus associated with hyperacidity of the gastric secretions. The pain associated with the latter is frequently confounded with that of appendicitis.

Using the pain onset as the gauge, a patient may obtain marked relief by taking a recumbent position on the right side or assuming the knee-chest position for several minutes at short intervals following a meal. Peristalsis may be further assisted by massage or by having the patient clasp the left knee and make strong intermittent pressure of the thigh against the abdomen

while lying halfway between the prone and the lateral position.

Helpful suggestion, abundant nourishment taken in small quantities and at short intervals, attention to any existing anemia, and the mechanical aid afforded by the before-mentioned procedures accomplish wonders in many patients.

Stiller's work has placed the whole subject on a new foundation and in the light of our present knowledge it becomes ludicrous to treat gastric atony as a local disease or to attempt to correct secretory excesses, perversions or deficiencies by drugs and diet alone.

Furthermore, the physician is at last in a position to appreciate the *raison d'être* of the wonderfully kaleidoscopic pain picture possible in the gastric neuroses and to understand why so many of its victims bear the scars of futile operations.

Time will not permit an extended discussion and I trust that my paper will be regarded only as an attempt to call attention to the basic features of an important and distressingly common ailment offering every opportunity for successful treatment in the light of a rational etiology.

In closing I shall summarize as follows:

1. The gastric neuroses whether motor or secretory depend almost wholly on an underlying asthenia.

2. This asthenia may be acquired or temporary, may be due to self-starvation or other debilitating causes, but almost always represents a chronic congenital insufficiency of body structure and function, producing a peculiar nutritional instability.

3. So-called passive neurasthenia or psychasthenia is most frequently seen in individuals of the asthenic habitus and is but a part of the clinical picture though a genuine and troublesome complication.

4. Gastroptosis produces symptoms only in the presence of atony or marked secretory changes and does not justify primary operative procedure.

5. The same statement as to the unwisdom of operative interference applies to other displacements such as movable kidney and certain uterine malpositions.

6. Certain cases occur in which no structural abnormality exists. Of these some are due to self starvation, others occur in the robust individual who represents the *malade imaginaire*.

7. Under proper conditions the gastric neurosis of the common type justifies hopeful prognosis.

8. Pain manifestations are so variable as to site, severity, character and persistence as to lead frequently to erroneous diagnosis and futile operative interference but rational non-surgical treatment affords relief in the greater number of cases.

9. Cases of the chronic congenital type bear surgery badly and usually obtain from it either definite harm or but slight and transient improvement.

10. Simple procedures may give great relief in mild cases and to those patients whose means will not permit the institution of the proper treatment but under the latter conditions failures are frequent.

11. All severe or persistent cases demand isolation, rest and hypernutrition, combined with helpful suggestion and the minimal use of drugs.

Finally, in our modern treatment of the dominant asthenic type of gastric neurosis we are successfully attacking the most common cause of chronic invalidism.

150 Lowry Arcade.

ABSTRACT OF DISCUSSION

DR. WALTER B. CANNON, Boston: It has long been known that the most efficient stimulus for the stomach and intestine is the mechanical stretching to which they are subjected; when we consider any mechanical stretching it means, of course, that there must be something to be stretched. This is a matter that should be kept clearly in mind. To illustrate what I mean, we may regard the effects of stretching on a rubber band. If an old rubber band is pulled out, and remains out, it is not stretched; if, on the other hand, a fresh rubber band is pulled out, and it goes back again, such a band has been stretched. The condition of the alimentary canal is somewhat analogous to the condition of the rubber band. Under certain conditions the alimentary canal is incapable of being stretched; then the introduction of materials into it does not bring about activity. This has been noticed by numerous observers. If the stomach, for instance, has been in a relaxed condition for a long time, the introduction of material will not produce peristalsis. The same thing is true of the large intestine, if it is in a similar condition of relaxation, which has continued for any length of time, the introduction of food into the organ will not result in antiperistaltic waves.

These are matters which relate to the influences of the central nervous system on the alimentary canal, and especially the influences coming through the vagus nerves; the gastro-intestinal tract to the ileocolic valve receives its "motor" impulses entirely through the vagi. If these nerves are severed, the alimentary canal for days will have only a slight activity. There is, therefore, a tonic state dependent on the connection between the alimentary canal and the central nervous system. I should like to emphasize again the point brought out by Dr. Greene with regard to the atonic condition of the alimentary canal, that it is not merely a local condition but one which results from the bodily state of the whole individual. This, I believe, is a very important point and well worthy of consideration.

We have evidence to show that a tonic state of the stomach and intestines is produced when the animal takes food. I have severed the vagus nerves before the animal was given food and, as a result I have seen the food in the stomach remain there for hours. If the vagi are severed after the animal has been given food, however, digestion will go on quite undisturbed. This indicates a discharge of tonic impulses along the vagus nerves during the time the food is taken.

There are further to be considered the emotional influences, such as fear and worry, which, acting through the splanchnic nerves, cause a lessening or abolition of tonus. These influences may stop not only motor but also secretory functions. I have brought these matters before the Section because I wished to corroborate from my laboratory studies the point which Dr. Greene has so strongly brought before you, that the activities of the gastro-intestinal tract are intimately related to the entire bodily state of the individual.

DR. FRANK BILLINGS, Chicago: I am entirely in accord with what Dr. Greene has stated in his paper. What Dr. Cannon has said agrees with what all of us have met in our clinical observations. I wish to discuss the question of surgical interference in this class of cases. The medical management, of course, must vary with every individual and with every type of patient suffering from a gastric neurosis. I think that the surgeon with widest experience has now learned that he should not interfere with these patients surgically. All over this country, I am sorry to say, there are many men who have not learned this. We continually find patients, especially in the large centers, who have been treated by surgeons and who have, of course, expected to be bettered by the treatment; they have, however, become worse. Many of them have become very miserable, and this has brought discredit on the proper management of these cases. It is to be understood that there may be a surgical side of the question in these cases sometimes. There may exist a focus of infection, for instance, which will have an influence on the nervous system and produce disturbances of the gastro-intestinal tract. These are the cases in which surgery should interfere. Sometimes there may be trouble caused by an appendicitis, by disease of the gall-bladder, or by gastric ulcer; again there may be a cystic degeneration of the

V. 5
1911

ovary which causes trouble. These are the cases to which the surgeon is invited. These patients should not be interfered with surgically unless there are distinct indications.

DR. SEALE HARRIS, Mobile, Ala.: I agree with what Dr. Billings has said in regard to the surgical interference in cases of gastric neurosis. I have seen many mistakes made by surgeons in operating on these patients, and I am sure it would have been well if the paper just read could have been read before the Section on Surgery as well as before the Section on Practice of Medicine. There appears to be a tendency on the part of surgeons to operate on all patients with chronic indigestion. I recently was surprised to hear a distinguished surgeon state that if a patient suffering from indigestion did not respond to treatment in a given time, the gall-bladder should be drained or the appendix removed. Surgeons are frequently doing both operations on these unfortunate sufferers. The stomach, a few years ago, was the organ most frequently attacked by surgeons. To illustrate this phase of the question I wish to relate an instance. The patient was a woman who came to me two years ago; she had been advised by a surgeon that she had an ulcer of the stomach and that her only relief was in the operation of gastro-enterostomy. She had lost weight, she was very nervous, she had much pain, she had hyperacidity and many other symptoms of gastric ulcer. This was a case that should have been carefully studied. After a thorough examination I was convinced that she had no gastric ulcer and that a gastro-enterostomy would probably have increased her symptoms; the operation, too, might have resulted in her death because of the low state of her nutrition. I advised the "rest cure" and employed psychotherapeutic measures with her. All the symptoms subsided in two months, without operation, and she gained 30 pounds. Many of you present, no doubt, have had similar cases.

One should make a careful and accurate examination of these patients. Indeed there is no class of cases in which the physician should be more careful in his history taking than in these patients. In getting the anamnesis it is very important not only to get a complete history of the symptoms complained of, but also of emotional disturbances to which they have been subjected, which might bring on gastric symptoms. At least 80 and, perhaps, 90 per cent. of the patients whom I have treated for digestive troubles are instances of gastric neuroses. These neuroses not only occur in women, but in business and professional men who have been overworked. When a patient comes for an examination with symptoms such as have been described, one should inquire if such a patient has been overworked. Has he had too long hours of work? Has he the worry habit? These are the things that give trouble in so many cases. The business man may have many difficulties to encounter of a financial nature; if so, he may be a sufferer from digestive disturbances. It may be the wrong husband, or wrong wife, or perhaps the proverbial mother-in-law, that is the cause of gastric symptoms in a person of neurotic temperament; if so, the readjustment of marital relations sometimes cures the patient. With regard to the treatment of the gastric neuroses in overworked business or professional men, it is apparent that their mode of life should be changed. They should work fewer hours each day, and have regular hours for rest and recreation. Eight to ten hours in bed at night and an hour's rest after the noon meal will sometimes work wonders in such cases. Such patients should also take increased nourishment and plenty of pure water between meals. This modified rest and forced feeding plan gives most excellent results.

DR. CHARLES L. GREENE, St. Paul, Minn.: I was glad to hear something regarding the work that Dr. Cannon has carried on in the laboratory in Boston; the work that he has brought before us is certainly very valuable and we are all glad to learn of it. With regard to surgery in relation to the disease under discussion, I brought this before you in my paper. One of the last patients whom I saw before leaving home was plainly a case of gastric neurosis with the neurasthenic habit very well marked. As Dr. Billings has stated, there is too much operating on these patients. As the result of treatment instituted, I have had a great improvement in these cases during the past few years. It may be interesting to report that, on my way here, I was asked by one of our leading surgeons if he could not read the paper which I was to present before this Section. When he had finished reading it he offered only one criticism—that the surgeons had not been hit hard enough. There is no question about the value of Stiller's work in this class of cases. Any of you who have the opportunity of reading his work should do so. The only papers in English that I am aware of which deal with this subject are two in number. One was published some years ago in the *Cleveland Medical Journal* and the other appeared in the *New York Medical Journal* six or more weeks prior to this meeting. After reading Stiller's paper, as well as others that have appeared on this subject, one will have a far better idea of the stigmata of the condition which has been designated as "chronic congenital asthenia." I think it is important that the general physicians of this country should understand that this class of cases, a class of patients called "chronic invalids," was designated under the wrong term; the term employed was in fact a misnomer.

COMPLEMENT IN HUMAN SERUM*

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C. C. Bass,[1] in "A New Conception of Immunity," draws interesting conclusions from several statements, the experimental proof of which he unfortunately does not give. The broad application made of the principles stated, and the fact that, as stated, they are contrary to generally accepted ideas, encouraged the following brief experiments.

The statements referred to are as follows:

"Human complement capable of acting with human amboceptor to produce lysis . . . is destroyed by any temperature above normal body temperature. . . . A temperature of 40 C. (104 F.) destroys complement in human serum in from fifteen to thirty minutes and prevents lysis regardless of the amount of amboceptor employed."

"Freshly drawn human blood contains little or no complement capable of acting with human amboceptors. . . . No human specific complement develops at ordinary fever heat, 38 to 40 C. (101-104 F.), such as obtains locally and often generally in most inflammations."

"In the event that human complement has developed in a blood . . .it again disappears in from thirty to seventy-two hours. . . ."

EXPERIMENTS

EXPERIMENT 1.—Five human serums, all of which had been on the clot for over seventy-two hours, were withdrawn and tested for complement before and after heating at 40.5 C. for thirty minutes.

To tubes, each of which contained 0.25 c.c. of a 2 per cent. suspension of washed calf-cells and 0.25 c.c. (two units) of a 1-600 dilution of inactivated serum of a rabbit immunized to calf-cells, was added the human serum in the following amounts: 0.8, 0.4, 0.2, 0.05 and 0 c.c. A similar series was set up for each patient with like amounts of serum heated for thirty minutes at 40.5 c.

Patients A and B gave no hemolysis with either heated or unheated serum. Patient C gave complete hemolysis with 0.4 c.c. of serum, both heated and unheated. Patient D gave slight hemolysis with 0.8 c.c. of serum, heated and unheated. Patient E gave complete hemolysis with 0.8 c.c. of serum, and almost complete with 0.4 c.c. heated and unheated.

This experiment shows that complement may still be present in serums over seventy-two hours old capable of completing a lytic system and that such complement is not destroyed by thirty minutes' heating at 40.5 C. It would be remarkable if human complement capable of

* From the Pathologic Laboratory, St. Luke's Hospital, New York.

1. Bass, C. C.: THE JOURNAL A. M. A., Nov. 4, 1911, p. 1534.

acting with a calf immune system were not destroyed by thirty minutes' heating at 40 C., while "human complement capable of acting with human amboceptor to produce lysis" were thus destroyed. As, however, the article in question[1] specifies the latter, the following experiment was performed to determine this point, as well as the truth of the statement that "freshly drawn human blood contains little or no complement capable of acting with human amboceptors."

EXPERIMENT 2.—A normal individual was bled directly into an equal amount of citrate solution in a water bath at 41 C. The cells were immediately centrifuged off, and varying amounts of the supernatant fluid added to a 5 per cent. suspension of sheep-cells previously sensitized with human serum containing natural sheep amboceptor, and set up in the bath at 41 C. Incubation was at 41 to 43 C. for thirty minutes.

The remainder of the supernatant fluid was retained in the bath at 41 to 43 C. for thirty minutes and then added to sensitized cells.

To tubes, each of which contained 0.25 c.c. of a 5 per cent. suspension of washed sheep-cells and 0.125 c.c. (=2 units) of human serum containing antisheep amboceptor, inactivated one-half hour at 56 C., was added the citrated plasma, prepared as above described, in the amounts given in Table 1.

TABLE 1.—COMPLEMENT CONTENT OF PLASMA OF NORMAL INDIVIDUAL

Citrated Plasma	Result	
	With Fresh Plasma	With Plasma Heated 30 Min. at 41 C.
0.6	Hemolysis Complete	Hemolysis Complete
0.3	Complete	Complete
0.15	Almost complete	Almost complete
0.075	Partial	Partial
0.0375	Slight	Slight
.0	None	None

EXPERIMENT 3.—Two patients, one with a temperature of 104 F., the other 104.5 F., were bled directly into equal amounts of citrate solution in a water bath at a temperature of 42 C. The cells were at once centrifuged off and the plasma thus diluted added to sheep-cells sensitized with human serum, as in Experiment 2, already in the bath at 42 C. Incubation was at 42 C. for thirty minutes.

TABLE 2.—COMPLEMENT CONTENT OF PLASMA OF FEBRILE PATIENT

Fresh Citrated Plasma from Febrile Patients	Result	
	Patient A	Patient B
0.6	Hemolysis Complete	Hemolysis Complete
0.3	Complete	Complete
0.15	Complete	Almost complete
0.075	Partial	Partial
0.0375	Slight	Slight
.0	None	None

From the above experiments the following conclusions seem justified:

1. Human complement capable of acting with human amboceptor to produce hemolysis is not destroyed by a temperature of 41 C. for thirty minutes.

2. Freshly drawn human blood contains a considerable amount of complement capable of acting with human hemolytic amboceptor, and such complement is not destroyed by heating at 41 C. for thirty minutes.

3. The blood of a patient with a temperature of 40 C. contains complement capable of acting with human hemolytic amboceptor.

4. Complement does not necessarily disappear from human serums in seventy-two hours after withdrawal from the body.

RABIES IN A HUMAN BEING, WITH POST-MORTEM

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Since the introduction of the Pasteur treatment, deaths in human beings due to rabies are rare. It is a blot on public health legislation that they should occur at all. Of all the serious diseases, rabies is the most easily prevented, and yet, when symptoms are once manifest, death is certain. Proper support of health measures would make fatalities from rabies unnecessary.

By courtesy of Dr. R. L. May, of Jacksonville, I have the privilege of reporting the following case:

Patient.—March 12, 1911, Dr. May was called to see a boy with severe throat symptoms and inability to swallow. It was at first thought that possibly this might be due to some of the commoner throat affections, probably diphtheria. On examining the throat, however, nothing definite was revealed and the forcible depression of the tongue during the examination seemed temporarily to enable the patient to swallow a bit of medicine which the doctor administered. When the boy tried to drink some water it was forcibly expelled through nose and mouth and a general convulsion was noted. Aside from this the patient's condition did not seem very serious and the doctor left, stating that he would call again.

History.—A few hours after leaving the patient, Dr. May received a hurry call and on returning found the patient very much worse. The boy was more nervous, the respiration was interfered with, and the muscles of deglutition were paralyzed. This aroused the doctor's suspicion and he began to inquire about the possibility of the boy's having been bitten by a dog, and learned that some three weeks previously a stray dog had made its appearance about the premises and the boy had captured it, intending to keep it as a pet. The dog seemed somewhat vicious at times and, when the boy was tying it up, bit him severely on the calves of both legs. The father, in attempting to help the boy tie the dog up, was bitten on the wrist but not very severely. Two other children were also bitten by the same dog but so far nothing had come of it. Shortly after this the dog escaped and nothing further was known of it. Three days before Dr. May was called, the child went to bed without supper, complaining that he did not feel well. The following day the condition seemed to be the same and he refused food and drink of all sorts with the exception of a small quantity of milk. In drinking the milk the child complained of feeling coffee-grounds in it, and the family, in order to humor the boy, obtained a tube for him that he might see that there was nothing of that nature in the milk.

Course.—As the disease progressed he seemed to grow thirsty and would ask for water, but when it was brought to him he would strike the glass out of the hands of those bringing it, or would jump out of the bed in various directions, as though he were frightened and trying to escape. The child ate nothing from the onset of the illness, on a Sunday evening, until the time of his death, which occurred late Wednesday afternoon of the same week. In order to determine definitely the cause of death, permission for autopsy was obtained.

AUTOPSY

External Macroscopic Examination.—The body was that of a poorly nourished male child, 9 years old, symmetrical in outline, development fair, no deformities. Conjunctivæ and mucous membranes were very pale. Eyes were sunken and rolled upward, pupils dilated to about 6 mm. in diameter; rigor mortis was present throughout, most pronounced in upper extremities, especially the jaw. There was no oozing from mouth or nose; teeth were irregular; mouth could not be opened; both sides of the face presented marked swelling, which extended uniformly down the neck to the upper part of the chest; on palpation this swelling crackled, showing the condition to be one of emphysema extending down as far as

V. 5
1911

the nipples on the chest and as far as the elbows on the arms. No especial redness was connected with this, such as one would expect in a swelling of an acute inflammatory nature. Dependent parts showed hypostatic congestion. Genitalia were normal. There was no edema of extremities.

Internal Macroscopic Examination.—Abdomen: Subcutaneous fat was scanty. The serous surfaces were smooth, moist and glistening, and there was no increase in the peritoneal fluid. The intestines were slightly distended with gas but appeared to contain a diminished amount of fecal matter. In places intestines showed darkened areas as of hemorrhage in the mucosa. On opening the small intestines a large worm of the type *Ascaris lumbricoides* was found; a smaller worm of the same type was also found in the stomach. The intestinal mucosa showed marked hyperemia which in places amounted to oozing hemorrhages, Peyer's patches showing the most marked injection. The other abdominal organs, on superficial inspection, presented no marked lesions. Time did not allow as careful an examination as would be desired here. The bladder was partly distended with urine.

Thorax: The mediastinal tissues were congested and markedly emphysematous, showing large blebs throughout. The lungs were emphysematous, cyanotic, congested and edematous. The chest was free from adhesions. The pleural fluid was not markedly increased. The heart showed no abnormality.

Head: A bulging of the meninges was found when the skull was opened. The meninges were redder than normal and the blood-vessels of the brain were congested. The brain substance was edematous, and on section showed small punctate hemorrhagic areas. A viscid exudate was noted on the mesencephalon, dorsally. It seemed that the general appearance of the brain was of a rather viscid quality, though not very marked.

At times it seems that there is a peculiarity about the appearance of the brains of animals in which we find Negri bodies within the nerve-cells. The gross findings in general are very indefinite and negative. The intestinal tract is as a rule empty on account of the animal's inability to swallow. In a certain number of cases a number of foreign substances such as pieces of wood, stones, etc., are found and considered characteristic. The microscopic examination, however, is characteristic and diagnostic.

Microscopic Examination.—In this autopsy we took pieces of Ammon's horn, cerebrum, cerebellum and mid-brain. From each of these we made smears, according to the custom of this laboratory. The smears were stained by the Anna Williams method, as follows: Smears are fixed in neutralized methyl alcohol for ten seconds, and then stained in a mixture of acid fuschin and methylene-blue. (Methyl alcohol 500 c.c., sod. bicarb. 0.25 gm., pieric acid 0.397 gm., the fixative. Saturated alcoholic methylene-blue 5 drops, saturated alcoholic fuchsin 1 drop in 10 c.c. of distilled water, constitutes the stain. Slides are flooded with stain as they are in staining for tubercle bacilli and heated to steaming for a few seconds to one minute, washed in tap water, dried and examined in oil.)

In all the smears examined we found Negri bodies, many of which were outside of the cell, but definite numbers were also found within the protoplasm of the large ganglion cells, in one of which my assistant, Dr. Mills, counted six definite, typical Negri bodies. Other pieces of brain-tissue were hardened in Zenker solution, sectioned and stained with hematoxylin and eosin. In the sections from the hippocampus, Negri bodies were found within the ganglion cells. In this stain they are eosin-staining with small vacuole-like formations in place of the "inner bodies" which stand out like granules or nuclear structures in the Anna Williams stain.

In addition we inoculated three rabbits, two subdurally, and one intravenously in the lateral veins of the ear. One of the rabbits died from the operation (subdural), but the other two survived the operation and died with typical rabies on the nineteenth and twenty-third days, the rabbit with the intravenous inoculation dying on the twenty-third day after inoculation. The brains of each of these rabbits showed Negri bodies in smears from Ammon's horn.

From the negative nature of the gross morbid anatomy, from the finding of Negri bodies in the ganglion cells in Ammon's horn and the reproduction of the disease by inoculating an emulsion in two rabbits which later died with symptoms of rabies (their brains again showing typical Negri bodies), we have a right to conclude that we were dealing with a case of rabies in a human being. This has been further borne out by the fact that a number of animals which were inoculated with brain-emulsion of animals, in which no Negri bodies were found, have continued well for a number of months. Other animals were inoculated with negative brains at the same time that the above inoculations were made and are well and show no symptoms at the present writing. Other positive brains were inoculated into rabbits subdurally. Intramuscular inoculations deep into the muscles of two guinea-pigs were made of an emulson of the brain of a rabid dog, which inoculations resulted in death from rabies on the fourteenth and seventeenth days, respectively, after inoculation. The brains of each guinea-pig showed Negri bodies. The dog whose brain was used in these inoculations was one of especial interest to the local health authorities, because the owner of the dog and a friend of his, who was a dog-trainer, declared that the dog did not have rabies. The dog, however, died of rabies and showed the presence of Negri bodies in the ganglion cells of the hippocampus and, as stated above, the inoculation of his brain-emulsion reproduced the disease in two guinea-pigs. The owner of this dog had been bitten by a bitch, a sister of the dog in question, and he died with typical rabies in spite of the fact that he had had nineteen anti-rabies inoculations.

HISTORY OF RABIES

E. Marx[1] speaks of the first reference to rabies as follows: "The first indication of the mania is perhaps found in that place in the Iliad in which Homer represents Teucer as calling Hector a mad dog."[2] Aristotle, in speaking of diseases among dogs, speaks of rabies thus: "Of these, lyssa (rabies) causes mania, and whatever is bitten by those bitten, goes mad except man." (322 to 284 B. C.) Democritus is said to have spoken of the disease in the fifth century before Christ. Celsius, in the first part of the Christian era, is the first to refer to human rabies and employs the term hydrophobia. Galen also spoke of the disease (second century, A. D.). The transmission of the disease to man by wolves was recorded in 1591. During the latter part of the eighteenth and the beginning of the nineteenth centuries the disease extended over all Europe; about that time it also made its appearance in America where the first outbreak was reported from Boston, in 1768. In 1779 it appeared in Philadelphia and in the state of Maryland. In 1785 it became prevalent in the northern states and soon after spread to the southern states. In 1803, and for a number of years following, it was epizootic among foxes in southern Germany and Switzerland. During the last century the disease has caused heavy losses among farm animals in Europe and America.

1. Kolle and Wassermann: Handbuch der Pathogenen Mikroorganismen, iv, part 2, p. 1264.
2. "Die erste Andeutung über die Tollwut ist vielleicht in jener Stelle der Ilias zu sehen, in welcher Homer Hector von Teucrus einen wütenden Hund nennen lasst."

Some of the leading men who have studied the disease carefully are the following: John Hunter in England, Viborg in Copenhagen, Waldinger in Vienna, Hertwig in Germany and Pasteur in France.

PREVALENCE

The disease exists in all countries except Australia, where it has been kept out by the most rigid quarantine laws. Recently England has been free, due to the proper enforcement of muzzling regulations. The following table is cited by Jordan.

Year.	Cases of Rabies.
No muzzling regulation, or an ineffective one.	
1887	217
1888	160
1889	312
Muzzling enforced.	
1890	129
1891	79
1892	38
Opposition to muzzling; ordinance relaxed.	
1893	93
1894	248
1895	672
Muzzling again enforced.	
1896	438
1897	151
1898	17
1899	9
1900	0

Such figures speak for themselves. Proper muzzling will prove efficient wherever enforced. In addition to muzzling, all dogs brought into England are kept in quarantine for six months and a careful history of the dog is recorded.

The disease is common in France, Belgium and Russia; in Russia most common among wolves. It is rare in Holland, Denmark and Sweden. It now exists in every part of the United States.

ETIOLOGY

The etiology of rabies is still a more or less disputed point. In 1903, A. Negri, of the University of Pavia, described bodies which he found in the large ganglion cells of Ammon's horn (hippocampus major). He believed these to be protozoa and the etiology of rabies. These bodies vary in shape and size, from 0.5 to 23 or more microns in diameter, and are round, oval or irregular in outline. The round and oval forms are most common. The bodies grow as the disease progresses and are found both intracellular and extracellular. The largest bodies are usually extracellular but occasionally one finds very large bodies within the ganglion cells of the hippocampus in the protoplasm of the cell, but never in the nucleus. They are always found in the brain (protoplasm of ganglion cells) of an animal in which the disease has run its full course. The bodies are larger in long drawn out cases than in those with an acute rapidly terminating illness. The Negri bodies can be found in all parts of the central nervous system, but with difficulty in such parts as do not have large ganglion cells. They are found in the largest numbers and attain their greatest size in Ammon's horn. It is not to be inferred, however, that the portions of the brain showing the most and largest Negri bodies are the most virulent. On the contrary, it is often found that the more virulent the infection the smaller are the Negri bodies, and they may not be found at all in the spinal cord in such cases. In animals inoculated with a fixed virus the bodies, if found at all, are so small that it is difficult to recognize them as Negri bodies. That these bodies are specific has been very well established. That they are protozoa and the original infective agent is not so satisfactorily proved or so generally believed. The structure of the body, however, its varying size and shape, with a tendency to send out pseudopodia, argues for the protozoan, rhizopodan nature of the body. The protozoan theory is further supported by the fact that quinin will neutralize the virus in the test-tube (Reichel). That the presence of Negri bodies in the brain means rabies has repeatedly been proved. In our present epidemic we have inoculated, from cases definitely positive, according to microscopic examination, three rabbits and two guinea-pigs, each of which developed rabies and died in due time, and when examined showed the presence of Negri bodies in their brains. At the same time a number of rabbits and guinea-pigs were inoculated with emulsion of brains from animals, which did not show the presence of Negri bodies by the microscopic examination, and all of these animals are alive and in good condition. Previous to our present epidemic we inoculated a number of rabbits with emulsion of negative brains and all of them are alive and in good condition. Such experiments have been carried out in all of the leading laboratories and ought to be convincing to the rabid skeptics.

The disease is either of the furious or the dumb type. In the furious type the animal is extremely restless and very irritable, snapping at everything which it sees in motion and sometimes at objects not in motion. A dog of the furious type will suddenly leave home and may be gone for several days, during which time it may have traveled many miles, but it finally returns home in the last stages of the disease and paralysis sets in. In the dumb type the animal rarely, if ever, bites, owing to the early paralysis of the jaw. Here there is a progressive paralysis. In both types of the disease there is a terminal involvement of centers controlling deglutition and respiration.

The infection is always transmitted by the bite of a rabid animal. The saliva of such animals contains the infection which we speak of as street virus. Not only is the saliva of the animal virulent, but it has been found that any portion of the central nervous system will produce the disease if emulsified and inoculated. The infection travels along the nerve from the bite or site of inoculation centripetally, and when it reaches the brain, symptoms become manifest, from which time all hope of a cure must be abandoned. That it is a slow-growing infection along the nerve-trunks has been claimed on account of the following experiments:

A number of different animals have been inoculated directly into the sciatic nerve and, after incubation of varying lengths of time, these nerves have been taken at various levels, pieces of which have been emulsified and inoculated into other animals. The more central portions have failed to reproduce the disease while those closer to the site of inoculation, i. e., distal portions of the nerve or cord, have given positive results. In some of these the distal portions of the spinal cord have given positive results while the medulla and thoracic and cervical portions have given negative results. That the growth along the nerve-trunks is the only method by which the infection takes place seems to be disproved by the experiments of Konradi, who inoculated a number of pregnant rabbits and guinea-pigs, and found that the young, born nine days before symptoms became manifest in the mother, were infectious to guinea-pigs, when

their brains were inoculated subdurally into the experimental animals. A number of cases are cited in which fetuses were removed from the mother dead of rabies, and an emulsion of the brain of each fetus was inoculated, with resulting rabies and demonstration of Negri bodies in the inoculated animal. One must first conclude from this that the infection was circulating in active form several days before symptoms were manifest in the mother. The presence of the virus in the saliva has been demonstrated as early as the thirteenth day before symptoms (Konradi). Schindler, in his work on rabies among rodents, obtained positive results in 30 per cent. of rodents fed with Berlin fixed virus. Pace reports a positive result from inoculating the emulsified cicatrix from a child dying with rabies.

The incubation period varies with the severity and location of the bite, the virulence of the virus, and the species of the animal biting and bitten. The virus of wolves is more virulent than that of dogs. The saliva of man is less virulent than that of dogs. In monkeys the disease becomes attenuated. Reichel gives the following table for the average periods of incubation:

Man	14 to 90 days
Cats	14 to 60 days
Horses	21 to 90 days
Rabbits	9 to 90 days
Dogs	14 to 60 days
Cows	14 to 80 days
Swine, sheep, goats	21 to 60 days
Guinea-pigs	8 to 60 days

There are rare instances in which man has developed symptoms after the hundredth day. One authentic case is reported in which the disease developed in a dog after the 365th day. Much longer periods have been observed by Konradi.

Bites about the face or any exposed surface are more serious than bites through clothing. Sixteen per cent. of untreated persons bitten by rabid animals develop rabies and die. This percentage is based on figures varying from 3 per cent. to 32 per cent. Among dogs, 67 per cent. of those bitten develop rabies.

The diagnosis is difficult to make clinically and should always be confirmed by a reliable laboratory. Veterinarians lay a great deal of stress on the peculiarity of the howl which, together with snapping and the ceaseless unrest, is considered pathognomonic. Hydrophobia does not exist in dogs, but is more or less marked in man. It has been stated that it is the fear of swallowing the liquid and the pain it causes, rather than any fear of the water itself. In two recent fatal cases in human beings at Jacksonville, Florida, the onset of the disease was characterized by headache and extreme nervousness. One of the patients would go into convulsions on the slightest provocation. The breathing is affected early. In both of the local cases insomnia was present from the onset. The second case referred to was that of a large well-built man, about 30 years old, who was bitten just above the eye. Treatment was started on the fourth day, but he developed symptoms on the nineteenth day after the bite, and died on the twenty-first.

PROGNOSIS

The prognosis is most grave. The diagnosis of rabies means certain death, a death most horrible to behold, and agonizing beyond description for the patient. There are, however, a few isolated reports of cases of rabies with recoveries. Joseph Koch, of Berlin, reports a number of instances in experimental animals and one case in a man. The animals inoculated with emulsions of positive and suspicious brains would develop symptoms which would last one week or more, and then would gradually recover. Some of these animals were later killed and emulsions of their brains gave positive results, typical rabies. One instance is cited in which a dog, while showing positive rabid symptoms, bit a man; the dog recovered, but the man developed rabies and died.

In another case a white laborer, aged 57, was severely bitten on the arms by a dog whose brain showed typical Negri bodies. Treatment was started on the third day after the bite. On the fifteenth day the patient complained of pressure in the stomach, headache and insomnia. On the morning of the seventeenth day, when going for treatment, he had to be supported by persons on either side, and on entering he said: "My legs are so weak that they can no longer carry my body; they are as if dead." The condition increased in severity until there was a partial paralysis of arms, legs, muscles of neck and face, and he became unable to close his eyes or pucker his mouth to whistle. On the thirty-second day paralysis of the bladder and bowels were made manifest by frequent involuntaries. Until the fifty-second day the condition was most grave, but from that time on a gradual improvement was noted and the patient was able to go to his home on the seventy-second day, after fifty-seven days illness. Some slight paralysis of the face and muscles persisted producing an ectropion of both eyelids.

The case was considered one of atypical rabies. The possibility of a luetic paresis was excluded by a negative history and a negative Wassermann reaction. We have, therefore, a well-developed case of rabies with recovery. It is unlikely that the course described could be due to treatment, since thousands of others have taken the same treatment, many of whom were delicate children, and none of them have shown any symptoms.

Other instances are recorded by Konradi and others.

TREATMENT

The treatment is entirely prophylactic and should be begun as soon as the person is bitten. The wound should be cauterized at the earliest possible moment, in order for cauterization to be of value, and one might say that if half an hour elapses cauterization is useless. The Pasteur treatment should be begun at once and given in accordance with the severity of the bite. The Pasteur treatment has reduced the average mortality from 16 per cent. for untreated patients to an average of 1.2 per cent. for treated patients. Of 24,000 patients treated at Charkow between the years 1888 and 1908, Kozewaloff reports 266 deaths, or 1.1 per cent. Of these, 161 died fifteen days after completion of treatment or later. Of the fatalities, 16.25 per cent. were of persons bitten by wolves, while the next highest percentage is that in persons bitten by dogs; 0.98 per cent. were fatal. In the cases in which symptoms develop either with or without the antirabic treatment there does not seem to be anything to be done except to try to keep the patient as comfortable as possible. Opiates in their various forms are useless to produce sleep. As much as 10 grains of morphin have been given in about eighteen hours' time without producing sleep. Chloroform should be resorted to in such cases as soon as the symptoms are definitely established, and the patient kept unconscious for many hours, the length of time depending entirely on the character of pulse and respiration. Since recoveries have been reported, as quoted in this paper, it might be possible that if the wear and tear of the con-

vulsive stage could be eliminated some might have a faint chance for recovery. In case the patient dies, the chloroform will have saved him from the agonizing mental state which such patients pass through. One other attempt can be made, namely, the administration of the serum of an immune animal or person. As much blood should be withdrawn as the individual's strength will allow, and, after separating the serum and red corpuscles, injected in graduated doses. This is partly speculative and will require a great deal of experimental work to show its real value. There is still room for a great deal of experimental work along lines of the true etiology of rabies and the treatment of developed cases.

In the preparation of this paper I am greatly indebted to Dr. R. L. May for the privilege of the post-mortem materials, to Dr. H. R. Mills for assisting in the post-mortem and the subsequent work in the laboratory, and to Dr. Iva C. Youmans. Drs. Mills and Youmans having had the largest part of the routine examinations in our recent rabies epidemic.

429 West Fifth Street.

RECENT EXPERIENCES IN THE ARTIFICIAL FEEDING OF ONE HUNDRED INFANTS

DURING THE FIRST THREE MONTHS OF LIFE *

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The experiences recorded in this paper were noted during the past year in the care of foundlings in a maternity home for unfortunate girls. No private cases are here included, so that my conclusions as to feeding-results are not so favorable as would be found in the handling of a similar number of cases in homes.[1] The material at hand included infants some of whom were fed at the start on breast-milk, but few of whom continued longer than two weeks. In many of these breast-milk cases the patients were wet-nursed and some fed on mixed milk drawn by the breast-pump. It would be almost impossible to trace any phenomena while the infant was on breat-milk to a cause in the milk or wet-nurse, as the handling of the infants was entirely separate from that of the mothers or wet-nurse, about whom I knew nothing except that syphilis had been carefully excluded. Wherever possible an infant at birth or in a nutritional illness was given a start on breast-milk, and this food was, of course, continued as long as breast-milk was available.

All cases were, therefore, problems for artificial feeding at varying periods, beginning at birth or within two or three weeks thereafter.

I wish to speak first of the initial loss of weight and the rectal temperature in both breast-fed and bottle-fed infants which our records show.

INITIAL LOSS OF WEIGHT

As has been stated by many observers, notably by Griffith and Gittings,[2] the breast-fed baby continues to lose weight for the first two to four days. The feature in which I was most interested was as to the day on which the child had regained the amount of its birth weight. In Schaeffer's series, 44.5 per cent. of infants were still under weight at the fourteenth day.[3] In the ninety-five cases of Griffith and Gittings, thirty-one did not regain their weight until after the fourteenth day. In my series of sixty breast-fed infants, eight did not show any loss of weight at the end of twenty-four hours, nor later. Four of these were wet-nursed from the start. With the other four, I could find no explanation as to why they so quickly recovered their primary weight. The average number of days was eleven while the longest was eighteen.

Case 1.—Baby H., weighed 3,725 gm. at birth, had lost 305 gm. at the end of twenty-four hours, began to gain on the fourth day but did not regain birth weight until the eighteenth day, after which the gain was regular. The child showed no febrile nor other disturbance and was nursed by the mother, whose condition was reported good.

In those infants that were given the bottle from the start, and that thrived, the return of the initial weight averaged no slower than the breast-milk babies. One infant on the bottle had about regained its birth weight at the end of twenty-four hours and continued to gain as follows:

Case 2.—Baby O., weight at birth 3,660 gm., was placed at once on half buttermilk and water. The second day the child regained to within 5 gm. its initial weight, and showed a gain of 100 gm. on the third day. A small amount of malt sugar to gain slowly when at the eleventh day there had been a total increase of 300 gm. above the initial weight.

RECTAL TEMPERATURES IN INFANCY

There is quite a difference in the text-books regarding the normal rectal temperature in the new-born. Rotch states that about a week following birth it is 98.2 F. Fischer places it between 99.4 F. and 100 F. Koplik believes that a temperature above 100.4 F. is abnormal. One frequently hears it stated that the temperature in the mouth is one-half a degree higher than in the axilla, and that of the rectum one-half a degree higher than that in the mouth. Therefore, assuming that the axillary temperature is 98.6 F., it has often been erroneously concluded that the normal rectal temperature is 99.6 F. In several years of routine temperature taking in the children's dispensary, I seldom saw normal temperatures above 99 F. It was for the purpose of convincing myself as to whether 99 to 100 F. is rare and should be regarded as pathologic in infants, that a study of seventy infants was made, first in the infants during the first nineteen days of life, and a second in infants up to six months of age. Sixty of these were on the breast for an average of nineteen days, ten were bottle-fed from the start. Nineteen days was the average that babies were fed on the breast, hence the new-born bottle babies were considered only for nineteen days. No difference was found in the normal temperature of breast- and bottle-fed, and the temperatures averaged the same in infants of this age as in those whose temperatures were taken up to three months, only a few of our cases remaining in the institution up to six months. The temperature was taken twice daily, at 8 a. m. and 6 p. m., just before bathing and feeding. The temperature of one child averaged 97.2 F., while eleven others averaged between 97.5 and 98 F. One infant alone showed an average temperature above 99 F., it being 99.4 F. Only those infants who were not premature, and who were running a consistent temperature while they were clinically well, were considered. The average of 2,660 temperatures was 98.6 F. The temperature at 6 p. m. averaged 0.07 F.

* Read in the Section on Diseases of Children of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

1. In Arch. Pediat., February, 1911, Dr. Glazebrook describes the Speedwell Country Homes idea of Dr. Chapin, a movement which will be appreciated by all who have had the sad experience of fighting the mortality in a foundling asylum.

2. Griffith and Gittings: Arch. Pediat., May, 1907.

3. Schaeffer: Arch. f. Gynäk., 1896, p. 2282.

above the morning temperature. So consistently was there some apparent disturbance in the infant whose temperature ran above 99 F. (only one of the infants in this number had an average reading of over 99 F.), that it has confirmed my earlier convictions that a temperature between 99 F. and 100 F. should be regarded as pathologic.

EFFECT OF PEPTONIZATION OF THE MILK

During the year we frequently peptonized the milk, adding the extract of pancreas and bicarbonate of soda to the bottle ten minutes before use. The milk was peptonized for many of the new-born and for many of those infants who were not gaining in weight, with the hope of finding a favorable effect. An occasional increase had been demonstrated to me by Rosenstern at the Berlin Kinderasyl. For many years in difficult cases physicians have used some form of peptonizing in feeding, often combining it with milk sugar. Undoubtedly we have all seen an occasional good effect. During the past year we have had but two cases in which gain could be attributed to peptonization. One was in an infant fed on buttermilk to which was added malt sugar. There had been no increase in weight for several weeks, the bowels and digestion, however, being clinically normal. One-third of a peptonizing tube was added to each bottle of the buttermilk preparation, with an immediate gain in the infant's weight.

CASE 3.—Baby O., aged 3 months, had gained regularly on malt soup containing two-thirds full milk of 3.4 per cent. fat, but at this time there had been no gain for ten days. The milk was peptonized, the weight increasing 211 gm. in the next two days, and continued to increase thereafter.

No favorable effect in all of forty cases was observed by peptonizing the food of the new-born infant.

EXPERIENCES WITH BUTTERMILK

The buttermilk which we have used was churned daily in the institution from top milk soured naturally at the room temperature or by the addition of a small amount of the previous day's buttermilk. In warm weather, the top milk frequently becomes sour in half a day at which time it is put on ice until ready for churning. A glass rotary churn has proved satisfactory and can be completely sterilized. As small a quantity as one quart may be churned at one time if desired.

In many of the infants that were difficult to feed, buttermilk was employed, and also in all cases of atrophy. As long as the child thrived it was kept on buttermilk, even through a period of several months, with the gradual addition of top milk. Our experience has been that it exerted a beneficial therapeutic effect in mild enterocolitis cases and that such cases developed less commonly among the infants who had been fed on buttermilk.

CASE 4.—Baby W., a healthy child, weighing 3,530 gm. at birth, fed on the breast for ten days, and then on a sweet-milk formula containing 2.5 per cent. fat for the next twenty days, during which time it gained only 150 gm. At this time we began using half buttermilk and water with the addition of 1 per cent. fat in the form of top milk. During the next twenty-three days the infant gained only 200 gm. The top milk was then withdrawn, the buttermilk was increased to two-thirds, and the water one-third, the infant gaining 800 gm. in the next twenty days, after which it was taken from the hospital.

Buttermilk proved of special value in the summer months, at which season it was better tolerated and produced better stools than the same patient would probably have had if fed on a sweet-milk mixture.

SKIMMED MILK

Some of the infants who had an apparent intolerance for fat and who took buttermilk easily, thrived for a time on skimmed milk. One child that had a simple loss of weight on mixed breast-milk showed a remarkable gain when put on skimmed milk with malt sugar. The routine was followed with a series of new-born infants of starting them on a dilution of skimmed milk with enough maltose to bring the total sugar up to 7 per cent., as low as one-third skimmed milk to two-thirds water. When an infant ceased to gain or failed to show any increase, top milk was added from time to time to bring the fat content up 0.5 per cent.

This method has given much better results in most cases than arbitrarily starting an infant at birth on a fat-containing milk with a higher caloric content that the infant needs or will tolerate.

MALT SOUP

Thirty infants were fed on malt soup for varying periods. Those that did not thrive were next tried on different quantities of the ingredients.[4] Four formulas were used, called Malt Soup A, B, C and D.

MALT SOUP A

(Keller's formula, with the exception of the flour, which is here reduced one-half.)

4 tablespoonfuls of malt soup extract, dissolve in 18 ounces of warm water.

4 level tablespoonfuls of wheat flour mixed with 4 ounces of water, and any lumps of flour strained out.

These are added and brought to a boil in double boiler, stirring all the time, and then boiled for five minutes.

Cool and add 11 ounces of whole milk.

MALT SOUP B

2 tablespoonfuls of malt soup dissolved in 18 ounces of warm water.

2 level tablespoonfuls of flour dissolved in 4 ounces of water.

Cool and add 11 ounces of whole milk.

MALT SOUP C

4 tablespoonfuls of malt soup dissolved in 12 ounces of water.

2 tablespoonfuls flour in 4 ounces of water.

Cool and add 17 ounces of whole milk.

MALT SOUP D

2 tablespoonfuls malt soup dissolved in 12 ounces of water.

2 level tablespoonfuls flour in 4 ounces of water.

Cool and add 17 ounces whole milk.

In these, the quantities of flour, malt soup extract and milk were varied, and were given according to the needs of the individual cases. These changes proved necessary and successful in many cases. Other modifications besides these four regular formulas were also used.

Infants under two months of age did not show the gain found in those who were older. We have used malt soup preparations in the majority of the infants and have been favorably impressed with its tolerance by infants above two months of age. The milk is not to be boiled or added until the malt soup is cooled, so that there need be no fear of scurvy.[5]

CASEIN MILK

The present German literature regarding experiences[6] with *Eiweiss-Milch*[7] is voluminous and favorable,[8] while comparatively little has been published in this country that has given practical proof of its merits.[9] Those who have seen its use demonstrated by Finkelstein and Meyer have felt that in theory it is correct and

4. Holt: Diseases of Infants and Children, Ed. 5.
5. Thomas: Ohio State Med. Jour., 1907.
6. Welde, E.: Therap. Monatsh., 1911, xxv, 83.
7. v. Reuss: Gesellsch. f. Inn. Med. in Wien., January, 1911.
8. Birk, W.: Monatschr. f. Kinderh., 1911, ix, No. 3.
9. Leopold: Arch. Pediat., August, 1910.

works successfully in their hands. That artificial feeding will always be a greater problem in the United States and in those other countries which have such extremes of summer heat than it is in the more moderate climate of Germany is evident. Therefore, it is not to be expected that casein milk will show so favorable results here as reported by the German observers. After twenty-four hours of a hunger diet, the use of a practical whey-free preparation, leaving out the buttermilk, such as we have employed in some cases of alimentary intoxication with diarrhea, was, in the favorable ones, attended by an improvement in most symptoms, but the rapid fall in weight was so alarming that the addition of buttermilk or sugar was imperative. When buttermilk was added to the casein milk, as advised by Finkelstein and Meyer, we saw no better results than by the use of buttermilk alone.

MALT SUGAR

Accepting the German teaching[10] regarding milk sugar[11]—that it is not so well absorbed as maltose, that it frequently causes a rise in temperature, and that it has the smallest influence on the body growth—we have used malt sugar in all cases that did not gain in weight and in many normal cases as a routine. Maltose is undoubtedly slower to ferment in the intestinal tract than is lactose.[12] With the advent of hot weather, it was found that the milk sometimes curdled after the addition of the malt extract, in which case the acidity of the malt was neutralized by the addition of carbonate of potassium, 4.8 gr. to the ounce of glycerinized malt extract. Many patients showed a gain in weight which could not be ascribed to any other cause than the change from milk to malt sugar. In some constipated infants, the change to malt sugar markedly improved the condition and frequency of the stools.[13]

CONCLUSIONS

From observations on one hundred infants in this institution during the past year, the following conclusions have been reached:

1. The average length of time before an infant regains its initial weight is eleven days.

2. The rectal temperature of infants under six months of age is 98.6 F. This method of taking should be employed exclusively, so as to avoid the misunderstanding which often exists regarding the indefinite mouth and axillary readings. A temperature of 99 F. or above is suspicious and should be regarded as pathologic.

3. Peptonization of milk showed no advantages in the new-born, but is occasionally beneficial in older infants.

4. Buttermilk is a useful food in some cases, even in the first weeks of life, and where breast milk is not available, should be tried in cases of fat intolerance and in enterocolitis.

5. Some infants showed increased weight when fed on skimmed milk which, when suitably diluted, can be made the basis for fat and sugar additions.

6. Malt soup is the food that in our experience proved the best milk preparation. . .

7. Casein milk has a useful but limited field in catarrhal enteritis, the alimentary intoxication of Finkelstein.[14]

8. Maltose answers all the requirements for a sugar in infant-feeding.

900 Rialto Building.

10. Leopold: Ztschr. f. Kinderh., Dec. 22, 1910.
11. Heimbolz: Arch. Pediat., May, 1911.
12. Rotch: Cardinal Principles for Successful Feeding of Infants.
13. Kerley: Arch. Pediat., March, 1908.
14. Finkelstein: Jahrb. f. Kinderh., lxv, lxviii.

ABSTRACT OF DISCUSSION

DR. THOMAS S. SOUTHWORTH, New York: The early regain of weight in such a large number of cases surprises me. In my experience in the hospital the baby's initial loss in weight is considerable. I can confirm what Dr. Neff says as to the peptonization of food for infants. It has largely failed me in my hospital work. Its value, where it is useful, is simply in changing the coagulability of the proteid, but where a child is given a formula which it cannot digest peptonization does not help matters. Malt soup mixtures with suitable milk modifications are very valuable, but it would certainly be a great mistake to go backwards and take one stock formula or one mixture and try to use it for all infants.

DR. M. DRANGA, San Diego, Cal.: I have found that in the case of babies under six weeks old, when they are unable to take other food, I can start them and they gain rapidly on condensed milk, although when admitted they would not retain barley water or any other kind of food. Condensed milk is used only until the babies are able to retain other food.

DR. LANGLEY PORTER, San Francisco: I believe condensed milk has a definite place in the feeding of infants. One of the arguments that is usually made against condensed milk is that it is low in fat and low in proteins. If any one giving condensed milk will study as carefully his formulas as he would in giving any other food, he will find it possible to augment the protein and the fat. I believe the contumely that has been heaped on condensed milk is deserved by the people who prescribe it because they do not use it as carefully as they do other forms of milk.

DR. J. P. SEDGWICK, Minneapolis: Regarding the mortality, a word from the northern section may be of interest. The twin cities, Minneapolis and St. Paul, have a population of about 500,000. There are few negroes, little poverty and little crowding. The mortality last year was between 600 and 700. The death-rate is higher during the summer, and although we do have a hot season the heat does not last as long. I remember one August, however, when eighty or ninety infants died. I have found the same condition of which Dr. Royster speaks. During some years we have a preponderance of the catarrhal type of diarrhea and in other years there is a preponderance of the enteritis type. I have been using casein milk and have found it of definite value in certain cases of atrophy and intestinal trouble. In regard to maltose, of which Dr. Neff spoke, I would like to know what form of maltose he used. Some preparations have much more dextrin than others. Maltose itself is rather expensive, costing about $3.00 a pound wholesale.

DR. R. B. TUBBS, Council Bluffs, Ia.: I cannot see why it is any more legitimate for us to give condensed milk than it is to give proprietary medicines. It has nothing in the world to recommend it but that it is sterilized. Why should we use condensed milk with 25 per cent. of sugar added to it? I cannot understand how a man can say that it does not produce scurvy. In my experience it does not agree with the babies except temporarily. I know the use of condensed milk has brought me more cases in a desperate condition than anything else. As regards the temperature as a causative factor in summer diarrheas, I believe that overfeeding has as much to do with the etiology as anything else.

DR. A. L. TILTON, Kingman, Ariz.: In the desert country of Arizona we use a great deal of condensed milk. We use it because it is, in a large number of cases, the only thing we can get. Although there are many cattle ranches in Arizona, a cattle ranch is the last place in the world where you will find milk because there is not sufficient grass near the ranch houses for the cattle to be well fed. Hence we have adopted condensed milk as the least evil, and in my limited experience in its use I have seen but one case of scurvy, and in that case no orange juice had been used. I do not think I would have permitted the use of condensed milk but for the fact that it had already been used there with success.

DR. I. A. ABT, Chicago: There is a great diversity in infant feeding. Professor Keller of Berlin collected formulas of feeding in different parts of the civilized world. He has shown that in England, in Germany, in the United States and in France they have their own methods. The fact is that babies

V. 57 1911

are raised on artificial food all over the world, and in no two countries is the same method employed. I believe that one is justified in feeding a baby according to the best experience that prevails in the section where one is practicing. If most babies in the desert of Arizona are saved by feeding condensed milk, then, it seems to me, that method of feeding is justified there at present. We still have much to learn in the matter of adapting artificial food to babies. I am in favor of every man telling his experiences according to the best light he has, and we may, in that way, be enabled to draw conclusions. Answering the gentleman who said it was wrong to use condensed milk because it was a proprietary food, I think it would certainly be wrong to sacrifice the babies for the want of it, if it will save them. I do not wish to be understood as advocating condensed milk, though I should not hesitate to use it if the supply of fresh cow's milk was for any reason unsafe or inadequate.

DR. L. T. ROYSTER, Norfolk, Va.: I have had no experience in feeding babies on condensed milk. Nine times out of ten the patients brought to me have been on condensed milk, and are in a wretched condition. I am in charge of an institution that takes foundlings. It was formerly customary to feed them temporarily on condensed milk, but I have made the experiment of feeding them on a solution of milk-sugar, and they do just as well. But those that have been put on condensed milk by the physicians have had it given them without any effort to modify it in any way, as many of the physicians knew no more about it than the mothers.

DR. W. V. C. FRANCIS, Los Angeles: I frequently put children on goat's milk; I believe that is one of the best substitutes for mother's milk.

DR. F. C. NEFF, Kansas City, Mo.: Dr. Southworth asked about the absence of the usual loss in weight of these infants. I did not mean that there was absolutely no loss in weight, but that they had regained it. We simply put them right to the wet-nurse. Whether that had anything to do with their regaining it so promptly, I do not know. As to scurvy, my statement in regard to the boiling of the milk in preparing the malt-soup was simply a quotation from Thomas, who, in 1907, objected to malt-soup because the milk had to be boiled. In my paper I have used quotation marks to show that it was not an expression of my personal opinion. Dr. Sedgwick asked about the maltose we used. The exact analysis of the malt extract preparation we used I do not know.

VERRUCA PERUANA*

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One of the most interesting diseases in South America is the one known as "verruca peruana" (*verruga peruviana*), *fiebre de la Oroya*, or "Carrion's fever," as it is called in Peru, in honor of Daniel Carrion, a young Peruvian who died as a result of his zealous attempt to determine the infectious nature of the malady which, although given the commonplace appellation of "wart," is a very serious and frequently fatal disorder.

Some knowledge of the disease is necessary to Americans, from the fact that American physicians have from time to time passed through the endemic region or have engaged in professional work in connection with some of the American commercial interests in Peru.

The disease is interesting from several points of view: to the parasitologist on account of the peculiar bodies in the erythrocytes, and on account of its probable transmission by ticks or other suctorial invertebrates having a peculiar geographic and altitudinal distribution; to the hematologist, on account of the remarkable blood-picture in the malignant form of the disease, there being a profound anemia; to the physician and quarantine officer, from the fact that the disease is rife in certain districts in Peru, where Americans have commercial interests and where American physicians and engineers, bridge-builders and other mechanics have occasion to pass through or work within infected zones. Convalescents occasionally return to the United States with some evidences of the disease still present on their persons.

It is of additional interest to Californians because one of the very few accounts of the disease by Americans is that of Browne.[1]

GEOGRAPHICAL DISTRIBUTION

Verruca peruana is an infectious disease in which a fever of irregular type, associated with more or less severe anemia, is followed by a wart-like eruption of the skin, and sometimes of the mucous or serous membrane.

Formerly, it is believed, the disease had a much wider distribution than it has to-day. It is now encountered in certain narrow valleys on the western slopes of the Peruvian Andes, between latitudes 8° and 13° South, and at altitudes of from 1,000 to 12,000 feet. It is distributed along narrow tributaries which drain into rivers flowing into the Pacific. The disease is never contracted in the lower coastal plain, but always up in the valleys at the higher altitudes mentioned, not less than 28 to 60 kilometers (16 to 36 English miles) from the sea. Neither does it cross the divide, for it is unknown on the eastern face of the Andes. It is encountered oftenest at altitudes of from 2,000 to 6,000 feet.

The chief endemic areas are to be found in the departments of Ancachs in the Province of Huarez; and in S. Bartolomé, Casapalca, Chosica, and Santa Eulalia in the Department of Lima.

The mortality from verruca was so great during the construction of the Oroya Railroad, which extends from Lima to the Cerro de Pasco mines, that one of the large bridges crossing the river is known generally as "Verruca Bridge."

Peruvian physicians believe that only by sleeping in an infected district or by passing through it at night can the disease be contracted; and it is generally believed that the disease is transmitted by the bite of an insect. This naturally suggests a carrier in the shape of a tick or mosquito, or other suctorial invertebrate having a peculiar altitudinal distribution.

CLASSIFICATION

Two forms of the disease are recognized: the malignant and benign.

Malignant Form.—This is known as "Oroya fever," "Carrion's fever" or *fiebre grave verrugas*. The initial stage of this form corresponds with that usually noted in severe acute infections. The second stage constantly exhibits fever of an irregular remittent or intermittent type. There is a rapidly progressive and severe anemia, the erythrocytes falling below 1,000,000, sometimes even to 500,000 per 1 c.mm. There is poikilocytosis, polychromatophilia, enormous numbers of nucleated red cells, leukocytosis and high color index. Coincident with the anemia there is vertigo, great restlessness and air hunger. The sensorium is always clear and the mortality very high. The third or eruptive stage occurs in the small percentage of patients who recover from the *fiebre grave*.

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

1. Browne: Verrugas and Arroyas Fevers, Tr. Med. Soc. Cal., 1872-1873, p. 173.

Benign Form.—In this group Barton places the milder forms of verruca infections. They are quite common and the mortality is low. The symptoms are more undefined and the patients usually follow their vocations. The anemia and fever are moderate, and the eruption is more frequenty of the nodular type and lasts longer than in the malignant forms.

The second stage is followed by the skin eruption which appears first as an exanthem of small, purplish-red spots, which become papular and later develop into warty excrescences occasionally of large size, having a tendency to spontaneous hemorrhage. The lesion may occur on the mucous or serous membranes and deep subcutaneous tissues. After lasting for from four to six months, the eruption disappears by involution or ulceration.

The period of incubation, if we consider the experiment of Carrion, is about twenty-one days.

There is no natural immunity to the disease of any kind—race, age or sex. Scheube says that infants have been born infected with the disease.

DURATION

The duration of the disease varies considerably, being a couple of weeks in the *fiebre grave*, to months and years in the other forms. The mortality among natives is said to be 10 per cent.; among whites 40 per cent. In the Oroya fever, however, it is 85 per cent. to 90 per cent. Frequent complications are septicemia, exhaustion, anemia, infections by the typhoid-colon group of bacilli and tuberculosis.

ETIOLOGY

Little can be gained by delving into the historical aspect of this subject. The infectious nature of the disease was demonstrated in 1885 by Daniel Carrion, a young Peruvian medical student, who inoculated himself in both arms with blood taken from warta. After a latent period of twenty-one days, he entered the febrile stage of the disease and died eighteen days afterward of *fiebre grave*, before the development of the eruption.

It is curious to note that in verruca several strains of paracolon bacilli have been isolated by Barton and Biffi, from patients suffering from *fiebre grave*, and also from cadavers in cases of the same disease; just as in yellow fever, varieties of paracolon bacilli, having been obtained from yellow fever patients before and after death, were thought by competent observers to be the cause of the disease.

In 1900, Barton called attention to the existence of infections by members of the typhoid-colon group of bacilli in patients suffering from verruca. These infections were noted during the course of an attack of verruca, particularly toward the end of the second stage, and during the eruptive process. Barton believes that the "typho-coli infections" alter the symptomatology of verruca and aggravate its progress to a considerable degree.

Biffi reports isolating two strains of bacilli, one resembling *B. paratyphosus*, Schot, the other, Gaertner's bacillus.

To those who have had any experience with infections by members of the typhoid-colon group in the tropics, and in view of our knowledge of the history of the relation of *B. icteroides* and bacillus *x* of Sternberg to yellow fever and the relation of the hog cholera bacillus to true hog cholera, which, as De Schweinitz and Dorset have shown, is due to a filterable virus, these bacteriologic findings of Barton and Biffi are very interesting, and they add another disease to the list of those frequently complicated by infections with bacilli of this group.

In October, 1905, Dr. A. L. Barton[2] of Lima called attention to certain bacillus-like elements in the erythrocytes of two patients suffering from *fiebre grave de verrugas*. Later, in January, 1909, he described the bodies found in fourteen additional cases. Barton stated his belief that the bodies were protozoa and were the specific agents of the disease. Gastiaburú and Rebagliati,[3] in October, 1909, confirmed Barton's findings.

Barton's views as to the relation of his intracellular *x*-bodies to verruca have not been generally accepted by European investigators; chiefly, I believe, for the reason that the latter have studied films in which the *x*-bodies were oftenest seen after they have "broken up," to use Barton's expression. In this condition they are more nearly like basophilic granulations. The illustrations by Galli-Vallerio[4] are entirely unlike the appearance of *x*-bodies when they first appear in the erythrocytes in verruga. Those of Basset-Smith,[5] while much too coarse, approach more nearly in two instances to the exact morphology. The general impression received from Mayer's figures[6] is that of cell degeneration, the rod forms being relatively too small and not in such relatively great numbers as they are in the early stage of the disease or during a recrudescence.

The *x*-bodies of Barton appear in the blood in the "severe wart fever" and disappear about the time of the appearance of the eruption. They are always seen first as slender rod-like forms with rounded free ends. They are situated within the erythrocytes but, according to Barton, cannot be detected in the fresh blood; consequently their refractive index must coincide with that of the erythrocyte. They are stained best with Giemsa stain, but not quite so well with other stains of this class when stained by the ordinary methods. One or both ends may take the stain a little more deeply than the rest, or a deeply staining swollen dot may sometimes be seen between ends. The rods are occasionally single, though oftener two or more, up to six or eight, may be seen, frequently grouped in parallel series, or in such manner as suggests, according to Barton, a process of reproduction. This, however, may be otherwise interpreted, for I have frequently found that rods of melanin in malarial zygotes of infected mosquitoes have exactly the same grouping. Filaments or irregularly disposed branched or pseudo-branched forms are seen. The rods are generally slightly curved, and when the erythrocyte containing them is torn, while making the smear, the bodies can be seen to preserve their morphology and staining characters outside the cell. They stain a dark blue or purple; never faintly blue, with sharply differentiated chromatin substances. In this respect they differ from protozoa and give the impression of being more like spirochetes than any other known type of microorganism. After a few days they are seen to lose their slender rod-like shape and become more irregularly swollen, distorted and fragmented. At this time they usually take the stain more deeply.

When the disease progresses favorably, the bodies disappear and the eruption comes out. If the bodies are seen to reappear in their slender rod-like form, it can

2. Barton, A. L.: Descripcion de elementos endoglobulares hallados en los enfermos de fiebre verrucosa, Cron. méd., 1909, xxvi, 7.
3. Gastiaburú and Rebagliati: Sobre la hematologia y etiologia de la Enfermedad de Carrion, Cronica Medica, Nov. 15, 1909.
4. Galli-Vallerio: Centralbl. f. Bakteriol., I, ab. orig., lviii, 228.
5. Basset-Smith: Brit. Med. Jour., Sept. 18, 1909.
6. Mayer: Centralbl. f. Bakteriol., I, ab. orig., lvi, 309.

be noted at the same time that the patient's symptoms have become more grave, and if the thin rod-like elements continue in large numbers in the peripheral blood, the patient dies. In these instances nearly every erythrocyte is invaded.

Barton states that the longest period the bodies have remained in the peripheral blood is twenty days.

If one examines blood of verruca patients after the *x*-bodies have undergone involution and become pyknotic and polymorphous, the impression of a peculiar basophilia of the erythrocytes would no doubt be entertained, but if one watches the rod-like forms from day to day in a malignant case during which there is a period of amelioration of symptoms followed by recrudescence of the disease, one is very strongly impressed with the opinion that the *x*-bodies represent microorganisms of some kind.

According to Barton, the recovery of the patient coincides with the disappearance of *x*-bodies from the peripheral blood.

What is the nature of the *x*-bodies? 1. Are they some form of basophilia or degenerative change of the erythrocytes or are they nuclear remnants? 2. Are they localized spots of degeneration of the erythrocyte, surrounding and obscuring a very minute or ultramicroscopic microorganism? 3. Are they bacilliform *Babesia*? 4. Are they bacilliform bodies invading the erythrocyte, such as have been described by Laveran and Carini[7] in lizards? 5. Are they related to the endocorpuscular bodies described by Graham-Smith[8] in the red corpuscles of moles? 6. Are they some representative of the sporozoa?

Without going into a detailed discussion of this phase of the subject, I will merely state that the slender rod-like *x*-bodies seem to me to represent some unique type of microorganism, for there is nothing exactly like them in the annals of parasitology or hematology.

BLOOD-CHANGES

In the malignant form of the disease very remarkable changes are noted. Briefly, the chief characters are basophilia of the red cells, the presence of many nucleated red cells, *x*-bodies in various stages, and numerous marrow-cells, all rapidly escaping from the marrow before they have reached the mature type seen in the peripheral blood during health.

The red cells show much basophilia, blue basophilic punctations and red nuclear remnants. There are crises in which enormous numbers of nucleated reds, chiefly normoblasts, are seen. There is much basophilic punctation of those nucleated reds which show a polymorphous or budding nucleus. Many microcytes and macrocytes are seen and there is some agglutination of the red cells.

With regard to the leukocytes, there is a leukocytosis from time to time, with the appearance of marrow-cells of various types, such as myeloblasts, neutrophilic and mast myelocytes, transitional leukocytes, and polymorphonuclear leukocytes with bluish-green granules. There is a diminished number of eosinophils.

The blood-platelets are notably diminished in number and have lost to a considerable degree their power of agglutination.

7. Laveran and Carini: Ann. de l'Inst. Pasteur, xxiv, 152.
8. Graham-Smith: Jour. Hyg., Cambridge, v, 453.

REPORT OF AUTOPSY

Patient, A. L. O., male, aged about 25, native of Pennsylvania, U. S. A., bridge worker, contracted verruca while at work on the Oroya Railroad. During convalescence and while returning to the United States, he died on the steamer in Panama Bay, Sept. 18, 1908. The body was packed in ice and next morning, through the kindness of the chief quarantine officer, Surgeon J. C. Perry, U. S. P. H. and M.-H. S., I had an opportunity to make a post-mortem examination of the body.

Sparsely scattered over the body, particularly about the ankles, were circular reddish-brown raised papules and some few pigmented spots of a dusky reddish-brown color. One of these latter in Scarpa's triangle in the left groin, 6 mm. in diameter, had broken down and contained necrotic material. These represent the "verrugas," some of which were still present, though of small size. Others had evidently undergone the process of involution mentioned above and a few had ulcerated.

There was generalized tuberculosis of the lungs, pleuræ, lymph-nodes, spleen, kidneys, and liver, internal hydrocephalus, hydroperitoneum and hydrothorax. The femur marrow was not definitely hyperplastic.

Smears from the spleen contained a little melanin, not positively malarial. No malarial plasmodia were detected. Smears from other viscera showed no *x*-bodies, save those from the rib-marrow which contained a few rod-like bodies, not definitely in the erythrocytes.

Erythrocytes showing *x*-bodies in a fatal case of verruca peruana two days before death.

Microscopic Examination.—Skin. The epithelium was flattened out and the papillæ had disappeared. The lymph-spaces of the corium were filled with large, phagocytic cells, distended with reddish-yellow refractile granules of different sizes, evidently red blood-cells in various stages of decline. The deeper connective tissue, particularly around the sweat-glands, was infiltrated by round cells, and cells of the connective tissue type. In this section the arterioles were not at all distended, numerous nor conspicuous, and this area evidently represented a small verruca which had undergone involution.

Another section of skin showed the epithelium thrown into folds without atrophy or obliteration of the papillæ. Deep in the subcutaneous tissue there was a large area of necrosis containing fragmented nuclei and eosin-staining débris. On the margins of this area there were numerous giant cells with mural nuclei, epithelioid and plasma-like cells and still more peripherally a number of round cells; but interspersed with these proliferated cells were many arterioles and capillaries with thin attenuated walls, with their lumens stuffed with red blood-cells. In some instances an arteriole might be seen immediately beside a giant cell. The section was very vascular and represented a tuberculous process, superimposed on a vascular verruca.

The kidney, spleen and lymph-nodes showed nothing of note but disseminated tuberculosis.

In the striated muscle a number of the fibers were swollen, the cross-striations obliterated, and represented a hyaline change.

These meager notes from the autopsy and from the examination of tissue are of interest, for they suggest

very strongly that the acid-fast bacilli in verruca tissue described by various writers are really tubercle bacilli, and that those who have merely examined tissue without seeing the autopsy, and who have described necroses in verruca tissue, which very closely resemble those of tuberculosis, have been describing tuberculosis of various viscera which has existed as a complication of verruca and which do not represent any specific change due to verruca *per se*.

PROPHYLAXIS

As the disease is limited to certain endemic regions, and is generally contracted at night, it may be prevented, of course, by keeping out of the danger zone. During 1909 an American bridge company undertook the construction of several bridges on the Oroya Railroad. The engineers and workmen engaged in putting up the first of these structures encamped within a verruca zone, and suffered much from the disease. At the suggestion of Dr. Barton, it was arranged that the men should sleep in a place a few kilometers distant, out of the endemic district, while they continued their work in the day time as usual. From that date there were no new cases. Peruvian physicians are quite alive to the economic importance of this disease and we may expect them to determine in due time the mode of infection, the true pathogenic agent, and thus establish a means of preventing the ravages of this tropical scourge.

In conclusion it should be stated that whatever the final opinion with regard to the *x*-bodies may be, the disease in all its aspects will amply repay careful study and research into the mode of transmission, relation of the *x*-bodies to the different clinical phases of the disease, the pathology and treatment.

I am under special obligations to Dr. A. L. Barton of Lima, Peru, for his kindness in furnishing me with clinical notes and consecutive blood-films from several cases of verruca.

Ancon Hospital.

VERRUCA PERUANA OR CARRION'S DISEASE *

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HISTORY AND DISTRIBUTION

Verruca peruana, or Carrion's disease, is an infectious disease endemic in certain districts in Peru. It is characterized by fever, rheumatoid pains, anemia and an eruption which develops into bleeding, warty tumors. Verrugas, to use the Spanish term, caused many deaths among the ancient Peruvians and among the followers of Pizarro during the conquest of Peru.

Various writers of that country, since 1730, have described the disease, but it was brought into greatest prominence in 1870 during the construction of the Oroya Railroad over the Andes mountains. Many of the foreign laborers were attacked by a strange and fatal disease which was given the name of Oroya fever and the connection of this fever with the external eruption, previously known as "verrugas," was established during this period. Their unity was illustrated by the case of Wilson, a mining engineer, who after an attack of Oroya fever returned to the United States and afterward developed a typical case of verrugas.

Carrion, a Peruvian medical student, inoculated himself, Aug. 27, 1885, on each arm with blood from a tumor of a case of verrugas; initial symptoms appeared September 17 and his death occurred October 5, the thirty-ninth day after inoculation, having passed through all the stages of Oroya fever. This experiment established still more fully the relation of Oroya fever and verruca and showed the infectious nature of the disease.

While verruca was formerly endemic in several countries of South America, it is now limited to Peru, being found in three departments, Ancachs, Libertad and Lima; and the infected areas are confined to certain deep river valleys of high altitude. Any person is liable to infection, regardless of age or sex, although organic debility seems to be a predisposing cause. Natives of the infected districts are immune, but all others are liable to contract the disease, even when merely passing through the country. Intra-uterine infection occurs, children being born with the disease.

The lower animals are liable to infection and present the same symptoms as human beings, but the external lesions grow much larger.

No authentic case of infection by personal contact has been known to occur outside of infected districts. Verruca, in common with many other diseases, has been confused with malaria, to which the character of the fever bears a close resemblance. In many ways it closely resembles yaws, but there are so many distinctive points of difference that it hardly seems probable that it is a form of that disease, as is claimed by some authorities.

BACTERIOLOGY AND PATHOLOGY

But little animal experimentation has been done, consequently the etiology has not been shown conclusively and the method of transmission is unknown, but it is very probable that it is conveyed by some form of insect life. An organism, apparently a bacillus, is found in the red blood-cells during the febrile period and in the tissues of the local lesions. It presents two forms, found in different stages of the disease, one closely resembling, morphologically, the tubercle bacillus, the other much thicker and apparently an involution form. This organism is 2 to 6 microns in length, has rounded ends, is motile, contains two or three granules resembling spores and is gram-negative, but stains well with methylene-blue. It grows readily on bouillon at a temperature of 98.6 F., cloudiness appearing on the second day. The organism from this culture is from 10 to 12 microns in length, and stains well with gram and carbol-fuchsin. Much careful investigation will be necessary to prove definitely whether this organism is really the specific cause of verruca as it now appears to be.

On autopsy, all organs are found pale and bloodless, the liver and spleen are frequently enlarged and there is constant enlargement of the lymphatic glands—a diagnostic point. There is hyperplasia of Peyer's patches and congestion of the intestinal mucous membrane.

SYMPTOMS

The period of incubation is not sharply defined; in Carrion's case transmitted by inoculation, it was twenty-one days, but if contracted in the natural way it may be from fifteen to forty days. The invasion is slow, beginning with headache, pains in the lower extremities, chills followed by fever, thirst, anorexia and insomnia. The digestive system presents the symptoms of an acute fever, the liver, spleen and lymphatics are engorged and petechiæ frequently appear.

* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911

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The fever follows a remittent or intermittent type and during the fastigium varies from 100 F. in the morning to 104 F. or higher in the evening, extending over a period of twenty-five or thirty days.

Anemia is the predominating symptom, coming on very rapidly, and much resembles that following hemorrhage. The red blood-cells are reduced to 1,000,000 or 500,000 and there is marked leukocytosis with a great increase of polynuclears.

The skin is white and wax-like, the lips, tongue, gums and nostrils blanched and the nails discolored. Icterus is visible in the conjunctiva, the respiration is rapid, often with dyspnea, the pulse from 120 to 140 and systolic murmurs are heard at the base of the heart extending into the vessels of the neck, the latter symptom being very annoying to the patient. Epistaxis is frequent and serious, but hemorrhage from the bowels occurs less often. Edema is often present in the lower extremities, rarely becoming general.

Vertigo is so severe that the patient cannot sit up for fear of syncope. Mild delirium occurs in the evening and hiccough is frequent.

Many patients succumb within twenty-five or thirty days, but if the patient survives the febrile period the symptoms gradually decline until the appearance of the eruption, when they recur. In most instances the eruption is not noticed until after the decline of the fever, but in some cases it appears simultaneously, although in the former instance it is quite possible that the eruption escapes notice, or may be located internally.

It was formerly thought that Oroya fever was a distinct stage of verruca, but later studies show that no sharp line can be drawn between the fever and the eruption and the division is made only for convenience of study.

In some cases there is a sudden onset of high fever, all other symptoms are very severe, and death occurs in a few days showing the eruption on the skin, small, discrete and with no tendency to multiply, or the disease may prove fatal without the appearance of the external eruption.

In a majority of cases there is an intermediate period of from forty days to four or five months before the eruption is seen. When it does appear, the digestive and nervous symptoms are increased in severity, and the anemia is more marked, being identical with that of the initial fever, but it develops more slowly. The fever of the eruption also follows a remittent or intermittent type, rising to 104 F. or higher and varies with the amount and form of the eruption. Edema is more constant than during the early stages, it is often limited to the lower extremities and is due to the induration caused by the eruption with the consequent compression of the venous circulation. The muscular and articular pains recur, the joints being tender and often tumefied.

There are two distinct forms of the eruption, miliary and globular, often difficult to classify, as there are all grades between the two extremes. The miliary form, the smaller, occurs both externally and in the deeper tissues.

Externally, this form is located above the true skin and may originate in three ways: a petechia beneath the Malpighian layer, as a sort of rosy drop more or less transparent, or as a slight elevation of a dead white tint resembling hypertrophied papilla. In whatever manner it first appears it grows gradually and develops into an elevated papule, dark, glossy and slightly pointed. In this form the papule varies in size from the head of a pin to that of a small pea, the smaller ones sessile, the larger tending to pediculate.

Exfoliation and bleeding occur, the larger ones ulcerating and discharging a yellowish liquid which forms a crust. A retrograde process follows and the growth disappears, leaving a slight stained appearance of the skin, which is transient.

The miliary eruption may be localized or general, discrete or confluent, and is located especially on the extremities and about the face, the palms, soles and body being usually exempt. The lesions occur on all the mucous surfaces of the body, on the peritoneum, in the liver, spleen, kidneys, lungs, pancreas, testicles, periosteum, bones and brain. Those on the conjunctiva form small, flat elevations the size of a millet-seed; in the nose they are larger and are the cause of the epistaxis. The brain lesions are the size of a pin-head, and located at the base, in the chorioid plexus and on the arachnoid membrane. It is a notable fact that the eruption always begins in the connective tissues and never in the parenchyma.

The globular form is found only externally and consists at first of a small subcutaneous elevation, tender and resistant to the touch, and like the miliary has a predilection for the extremities, the face and especially the ears. As the tumor grows, the overlying skin becomes purple, painful on pressure and in appearance and consistency resembles a furuncle. It finally becomes conical, the skin grows thinner and is pierced by the growth, which now assumes a globular form and shows a tendency to pediculate. Fissures form and ulceration with hemorrhage are subsequent symptoms. This form varies from the size of a hazelnut to that of an orange.

In those of medium size, subinvolution begins, the growth becomes pale and shriveled, falls off and cicatrization takes place; but when they are large, gangrene, secondary infection and extensive suppuration are common. Both forms may be found in the same case, or they may alternate, the period of eruption being from six months to two years. In the section, a verruca tumor somewhat resembles a sarcoma, having a stroma similar to embryonic tissue, and a circumscribed adherent wall. It is highly vascular, the blood-vessels having the appearance of sinuses.

Pneumonia, enteritis and paratyphoid are common complications, and secondary infection of the eruptive lesions may result in septicemia.

DIAGNOSIS AND PROGNOSIS

The diagnosis is not always easy, but in a person who gives a history of having been in the infected districts, showing the symptoms of fever, anemia, vertigo, rheumatoid pains and enlargement of the lymphatic glands, verruca should be strongly suspected. When the eruption appears it is easily recognized.

The enlarged liver and spleen are not so constant as in malaria; in the latter the anemia comes on more slowly, prostration is not so severe, lymphatic enlargement is absent, the action of quinin is positive and the plasmodium is found in the blood.

Yaws, apparently a very similar disease, is not congenital; the yaws appear on the body as well as on the extremities, the general health is little affected, there are no visceral changes, the mortality is low, and the *Treponema pertenue* is found in the eruptive lesions.

The prognosis is grave, the mortality, according to some authorities, being as high as 90 per cent. Most of the deaths occur prior to the appearance of the eruption, and when it appears the outlook is more favorable, especially if it comes out rapidly and becomes general, but when it is partial or pale and atrophies without the general condition improving, it is not so good.

PROPHYLAXIS AND TREATMENT

Until the manner of infection is known, the only prophylactic measure to be recommended is to remain outside the districts known to be infected.

It is not considered necessary to isolate the patient, as there is no danger from personal contact. The patients whom I have seen were being cared for in the medical wards of Dos de Mayo Hospital, Lima, where they are received and treated without fear of infection.

The therapeutic resources are limited and consist principally of symptomatic and supportive treatment. Quinin is indicated if malaria exists as a complication, but it has no effect on verruca itself. The digestive system should be put at rest, the food being light and digestible, and when vomiting is constant, rectal feeding is necessary. Tonics and reconstructives are very useful when they can be borne. Saline solution by rectum and intravenously is used to great advantage during the critical part of the febrile period.

In presenting this paper, I do not wish to be taken as an authority on verruca, but merely give the impressions gained by a rather limited study of the disease while on a recent visit to Peru, together with information gleaned from literature which it is believed is but little known to the profession of the United States.

Verruca has not been widely investigated as yet, and it is believed that a further study of this interesting disease will prove it to be insect-borne and perhaps throw some light on other diseases, the etiology and transmission of which are not yet understood.

It is desired to render proper credit to Dr. Ernesto Odriozola of Lima, Peru, whose excellent monograph on verruca has been freely consulted in the preparation of this paper, and to extend thanks to Dr. Julian Arce, Director of Health of Peru, for presenting me with a copy of this work. Finally, I would acknowledge my obligation to my wife for the translation from the French of the above monograph.

THE RELATION OF PELVIC DISEASE TO EXOPHTHALMIC GOITER *

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The exophthalmic syndrome is now generally conceded to be due to excessive secretion of the thyroid gland, and as a result of this view recent therapeutic measures have been directed toward removal of a portion of the secreting tissue. In connection with this I desire to express my suspicion that too much emphasis has been placed on a merely excessive secretion. The histopathology of the exophthalmic thyroid should make us suspect that the secretion is not only excessive, but also is changed in character, for the reason that whenever gland-cells depart from the usual as markedly as is indicated by tinctorial chemistry in these glands, there is likely to be some change in their product. I desire to question emphatically the entire correctness of the minor premise before beginning my argument.

From time to time inquiries as to the relation of the thyroid to other organs have been conducted. It is my purpose to offer a contribution to this phase of the subject, in so far as it relates to the genital organs. This paper will be confined to clinical observations, including the result of therapeutic tests in cases in which a relation of this kind was believed to exist.

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There are a number of phenomena both physiologic and pathologic which call attention to the relation between the genital organs and the thyroid. The most familiar phenomenon, and one which is known even to the painters, is the slight congestive enlargement of the thyroid incident to menstruation. This enlargement when associated with menstruation is worthy of note, as it is often attended by a nervous irritability and a quickened pulse and a slight rise of temperature. Equally well known is the genital aplasia in cretins and the suspension of genital function in myxedematous patients, which returns, however, when the myxedema is relieved by thyroid therapy. Suggestive, also, is the disposition to obesity after the menopause or after ovarian atrophy and the temporary reduction of fat by the exhibition of thyroid extract. In vomiting of pregnancy Siegmund and others report beneficial results from the administration of thyroid extract. It has long been recognized that in exophthalmic goiter the uterine function is frequently disturbed. This has usually been considered as a secondary result, though the opinion that the sequence of events is direct, has existed without, however, any attempt at proof. Some exophthalmic patients are much benefited by pregnancy while others are made worse. These and many other phenomena show the relation between the thyroid and the genital organs.

Unfortunately, we have little information of the pathology of these coexistent conditions. I have sought to contribute something to this question by careful clinical observation together with examination of pathologic material whenever such became available. My plan has been to treat the associated lesion as if the goiter did not exist, whenever it was clear from the history that the former began before the goiter. I have operated on five patients who presented gross gynecologic lesions such as are amenable to ordinary surgical treatment, in whom the pelvic disease certainly existed many years before the first symptoms of thyroid intoxication. Only patients operated on more than three years ago will be reported.

CASE 1.—*History.*—Mrs. S. A., patient of exceptional intelligence, 36 years of age, has had no children; she gives a history of pelvic inflammation soon after marriage twelve years before, and has not been strong since, being subject to periodic pain and bladder irritation. Menstruation was variable, but not painful; in fact the pelvic disturbance was often less marked during this time. She was nervous and slept badly. Eighteen months before examination, while going past an excavation on a dark night, she fell into an incompleted cellar. The bruises sustained were not severe but she suffered greatly from fright. She never overcame her nervousness and soon her heart became rapid and irritable. She noticed that her eyes were becoming prominent. This caused her to consult an oculist, who prescribed 5 grains of thyroid extract four times a day. She grew worse.

Examination.—The pulse was 136, quick and jerky. The thyroid gland was noticeably enlarged. Exophthalmos and von Graefe's sign were well marked. Tremor and irritability were especially prominent. Pelvic examination showed a uterus very tender and immovable with resistance on each side. No definite mass could be outlined.

Operation.—Laparotomy, done in 1904, showed chronic pus tubes, the tubes and ovaries being imbedded in masses of fibrous tissue. Both tubes and the left ovary were removed.

Postoperative History.—The operative recovery was uneventful. Three months after operation the pulse was 80 and soft, the thyroid enlargement much less and exophthalmos was still discernible. Two years later she writes that she is well and adds that her heart palpitates easily, particularly at the menstrual periods. The condition of the thyroid and exophthalmos could not be determined by correspondence. The results in this case are symptomatically very satisfactory.

CASE 2.—*Patient.*—Mrs. B., aged 42, has had two children and has suffered from backache since the birth of the first. Menstruation is often profuse and digestive disturbance and constipation have been constant. She has gradually become more irritable and sleepless. One year ago the diagnosis of exophthalmic goiter was made and thyroidectomy advised by her physician.

Examination.—Her pulse was 120-136, jerky and small. Exophthalmos was well marked. There was no diarrhea and the tremor was inconstant. The uterus was large, very tender and low; the cervix was lacerated and eroded. The fundus was in the cul-de-sac and was too tender to be elevated.

Operation.—Amputation of the cervix, shortening of the broad ligaments through the vagina and repair of the perineum were performed and the round ligaments shortened in 1905. The ovaries were normal.

Postoperative History.—Operative recovery was uneventful. The general improvement was very marked before she left the hospital, at the end of three weeks. At the end of a year the goiter had disappeared and the exophthalmos could not be detected with certainty. The pulse was 78. This was one of my early operations on the broad ligament and the cervix was still low but not so low as before the operation, and some bladder symptoms remained. The patient was anatomically and practically well and symptomatically entirely so.

CASE 3.—*Patient.*—Mrs. B. had exophthalmos and goiter; the pulse was variable from 79 to 90 when she entered the hospital. She complained of nervousness and pelvic pain, the nervousness being the more distressing. Endometritis and retroflexion were diagnosed.

Operation.—At operation (1906) tubal adhesions were discovered. Curettage and the Gilliam operation were performed.

Postoperative History.—The pulse became rapid during convalescence, reaching 120, and was still 100 when the patient left the hospital.

Two years afterward she reported by letter she was perfectly well. Examination, however, made a year later showed the pulse to be 86 and the tension a little high. The goiter has disappeared but there is a suggestion of exophthalmos. The patient's own estimate was that of unqualified recovery.

CASE 4.—*History.*—Mrs. D., whose only child was 4 years old, had exophthalmic goiter of several years' duration. In 1907 abortion was induced at eight weeks for uncontrollable vomiting of pregnancy, with marked exacerbation of the Basedow symptoms and rise of temperature to 103.5 and intermittent delirium.

Examination.—In June, 1907, she entered the hospital, with a pulse of 110. Exophthalmos was pronounced and the goiter was large. Tremor was marked, insomnia very distressing and the general nervousness extreme. There was marked loss of weight, dysmenorrhea and constant pelvic pain. Retroflexion, lacerated cervix and perineum with a large and tender uterus was diagnosed on examination.

Operation.—The lacerations were corrected and the Gilliam operation for the retroflexion was performed.

Postoperative History.—The patient regained her weight promptly after operation and ten months after there was great improvement in her general condition, particularly in the nervousness. Exophthalmos was still marked but the goiter was much reduced. The exophthalmos is still present but von Graefe's sign has disappeared and, save for excitability, the patient is symptomatically well.

CASE 5.—*History.*—Mrs. S. has had one child and has had pelvic disturbance since its birth four years ago. She had albuminuria of pregnancy and convulsions and spontaneous labor at a subsequent pregnancy. Pulse 120, exophthalmos and goiter well marked and nervousness extreme. At examination the cervix and perineum were found to be lacerated, and there was extreme pelvic tenderness.

Treatment.—The treatment was correction of pelvic lesions as in the previous case in 1908. Improvement was very marked but the pulse is still rapid at times, particularly when surprised, as by the unexpected arrival of visitors, but she regards herself as well.

In each of these cases there was a well-defined exophthalmic goiter associated with a distinct surgical disease of the pelvis. Each patient was treated as though no hyperthyroidism existed. All but one were markedly improved before dismissal from the hospital, and in each of these the history of pelvic disease antedated many years the advent of the exophthalmic goiter. It is worthy of note that the most persistent symptom was the nervousness and in two cases an associated tachycardia when excited. Except in Case 3, there was improvement before the hospital period was over.

In addition to these patients I have been able to follow a series of others who were not operated on for some reason, but each of whom possessed a pelvic lesion long before the beginning of the hyperthyroidism.

CASE 6.—Mrs. H., patient, when first seen in 1895 was 18 years of age. She had had dysmenorrhea compelling a period of rest in bed at each period since the age of 14. At the time of examination there was well-marked tachycardia, goiter and exophthalmos and great nervousness, and there was a rise in temperature for a period of weeks and some delirium.

Rest in bed and sedatives produced favorable results after several months. A year later, while the Graves' symptoms were still well marked, the patient married against my advice. Contrary to my predictions she was much improved in pregnancy and her condition was that of a symptomatic cure after delivery. The patient has been free from symptoms since that time, now fourteen years, and the tachycardia and goiter have been permanently relieved. Her dysmenorrhea also was relieved by the first pregnancy. There is still a trace of exophthalmos, though none of the other signs of hyperthyroidism can be detected. She has since given birth to five children, and apparently not content with this expression of derision of her medical adviser she recently emphasized it by giving birth to twins.

Cases improved by pregnancy are numerous in the literature, but unfortunately in these cases there is no evidence as to the condition of the pelvic organs before pregnancy and it would be interesting to know if these cases were coincident with an improved hyperthyroidism.

CASE 7.—Mrs. A., aged 46, mother of four children, after the birth of her first child suffered much from pelvic disturbance and was afflicted by a chronic eczema. At the age of 44 she began suddenly to manifest severe evidence of menopausal disturbance after a sudden cessation of the menses. She had cold sweats and sleeplessness in a marked degree. These symptoms were treated with sedatives. The nervousness increased, however, and suddenly after six weeks of this treatment the pulse-rate rose to 120. These conditions became worse and after a further course of three weeks, goiter was well marked and the von Grafe sign was pronounced. Rise of temperature and delirium set in and she died in this condition, ten weeks after the beginning of the disease.

CASE 8.—Mrs. H., aged 36, has been very nervous for several years, especially at the menstrual periods, and has had pelvic pain whenever she was on her feet. Pulse 120, von Graefe's sign present and thyroid easily palpable. Uterus was large and tender and cervix eroded. Cervical amputation was advised, which was done by another surgeon. A report was received four years later, saying she was much improved in every way. No details were obtainable.

CASE 9.—Miss F., aged 40, has moderately severe goiter, tachycardia and exophthalmos and has had dysmenorrhea since childhood. The pelvis was not examined. She was given bromids and hydrastis. After three years she sometimes is nervous but is "well enough." The dysmenorrhea has disappeared.

CASE 10.—*History.*—Mr. B., aged 32, came with diagnosis of aortic regurgitation. His pulse was 132, goiter well marked, exophthalmos moderate and tremor was pronounced. His chief complaint was sleeplessness and loss of appetite. He had given himself to excessive venery, indulging in intercourse

nightly and frequently more than once. The prostate was very tender, slightly enlarged and softer than normal. There was tenderness and hyperesthesia of the deep urethra, but the seminal vesicles were free. Under bromid treatment the pulse remains below 80, sleep and appetite are good but the patient is still nervous at times. He now does without his bromid for long periods. He returns at times for medicine, stating that he has difficulty in controlling his sexual appetite, and that this presages an increase of the Graves' symptoms.

CASE 11.—*History.*—Mrs. K., aged 44, has three children, the youngest being 14. She has been nervous many years and has had dysmenorrhea. I was called for opinion as to uterine cancer. There was no evidence of cancer but the uterus was large, tender and very hard, though symmetrical in shape. The cervix lies just within the introitus. She had lost 50 pounds in weight. Menstruation had ceased at the time of the advent of the hyperthyroidism. Rest in bed, with bromids, checked the loss of weight, but there was little general improvement. After four months hydrastis in full doses was added. Six weeks later improvement was marked and the weight increased amounting in all to 39 pounds. In another month menstruation was reestablished, which signalized marked improvement in the pulse-rate. The improvement has been progressive but the patient is still a semi-invalid.

In this entire series of cases there has been a definite pelvic disease which from the history clearly antedated the hyperthyroidism for many years. Each has improved by treatment directed solely to the pelvic disorder. That exophthalmic goiter is associated in some way with reflexes is suggested by the fact that Jonnesco's operation is attended by a measure of success. It has been suggested that in the ligation of the thyroid vessels the improvement is in part due to the breaking of the nervous connections.

These results, together with the fact that many patients with exophthalmic goiter improve under sedative treatment and rest, when no attempt to discover a primary source of irritation is made, have caused me seriously to consider whether or not this disease should ever be treated by the removal of the thyroid without a careful study of the patient. The mortality rate of thyroid operations is high. The vast majority of fatal cases are not reported. The after-results of the operations are not given with sufficient detail or after a long enough period of time to permit of any judgment as to the degree and permanency of improvement. Rest in bed may account for some of the improvement noted after thyroidectomy. That the chief dangers of operation are caused by fright, as Crile believes, is not supported by the experience of the operations here reported. In Case 3 only was there a temporary increase in the symptoms of hyperthyroidism. In Case 4 there was uncontrollable vomiting in pregnancy occurring after the appearance of the hyperthyroidism. A case was recently related to me in which an acute exophthalmic goiter developed after the beginning of uncontrollable vomiting of pregnancy. We have then the apparent paradox that pregnancy may cause or cure exophthalmic goiter. Unfortunately, we are not, as previously mentioned, possessed of sufficient detailed information to permit a conclusion. We must determine in those instances in which pregnancy was followed by improvement, whether or not the patients were possessed of such pelvic diseases as are ordinarily relieved by pregnancy. The cure of the pelvic disease by pregnancy may be the cause of the improvement in the hyperthyroidism. On the other hand, we do not know the cause of the vomiting of pregnancy or of its exaggerated state, hyperemesis. We ascribe it, probably correctly, to a reflex. If we knew the causes which exaggerate the reflex and thus produce hyperemesis, we might predict which cases of hyperthyroidism associated with a pelvic lesion would be made worse by pregnancy.

The evidence here presented seems to suggest that the pelvic reflexes should be more carefully studied before resorting to thyroidectomy in hyperthyroidism. It is not enough to be satisfied with the history of pelvic disease, but pelvic disease should be sought for. The history may fail to give evidence of a pelvic lesion when one exists. I have repeatedly discovered a pelvic lesion when the history failed to give evidence of such a disease. I have recently operated on a patient with early hyperthyroidism who had been treated for some years for tuberculosis of the lungs, because a persistent loss of weight could not be otherwise accounted for. A retroflexion, extensive laceration of the cervix with erosions existed, though the history gave no suspicion of a pelvic lesion and the discovery was made only because a routine examination of the entire patient has become with me a rule when hyperthyroidism is diagnosed.

A similar case is as follows:

CASE 12.—Miss F., aged 30, had been suffering from exophthalmic goiter of moderate degree for one year. She had been under able medical supervision and thyroidectomy was advised. She denied absolutely any pelvic lesion, but pelvic examination was insisted on and a retroflexed uterus was found, which was excessively tender. Examination was without anesthesia and tubes and ovaries could not be palpated. She subsequently stated that she had had pain at the menstrual periods for a period of years and in the intervals when much on her feet. She noted that nervousness and tachycardia were increased at the menstrual periods. She explained her previous denial of pelvic disturbance by stating that she had been told that the pelvic disturbance was the result of the hyperthyroidism. The medical adviser who made this statement had made no pelvic examination. Recent operation disclosed extensive pelvic adhesions. In the four weeks following operation the pulse declined from 130 to 80; the operation is of a too recent date to permit a judgment as to the ultimate results.

Lesser degrees of pelvic or, more broadly speaking, sexual abnormalities such as seminal vesiculitis, or sexual psychoses manifest in masturbation, both physical and psychic, often exist which antedate the exophthalmic goiter. These studies lead me to believe that our conception of hyperthyroidism is too narrow. If the exophthalmic goiter syndrome is due to a hyperthyroidism, to what is the hyperthyroidism due? Perhaps, if all exophthalmic cases are thoroughly examined with reference to pelvic lesions and other diseases, we may gain additional light on the nature and cure of the disease. I am reminded of a remark made by Dr. Howard Hill in discussing this phase of the subject that "if we did not have sense enough to give soda in gastric hyperacidity, we would be cutting out half the stomach to lessen the secretion."

CONCLUSIONS

1. That there is some relation of the thyroid gland and the pelvic organs is generally recognized.

2. Exophthalmic goiter and pelvic lesions frequently coexist. In such instances the pelvic lesion existed before the advent of the hyperthyroidism. Secondary genital atrophy may be the beginning of terminal stage of myxedema.

3. The relief of the pelvic lesion is in certain cases followed by the amelioration of the exophthalmic goiter.

4. It seems highly probable that in certain instances the pelvic lesion stands in a causal relationship to the exophthalmic goiter.

5. The possibility that reflex irritation may exert an influence in producing an increased or perverted secretion of the thyroid makes it desirable that, when the diagnosis of exophthalmic goiter is made, search should be made for some possible source of irritation. The physiologic relationship between the thyroid and the pelvic organs suggests that the latter are particularly liable to be the source of such irritation and deserve particular attention.

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ABSTRACT OF DISCUSSION

DR. E. M. LAZARD, Los Angeles: Dr. Hertzler asks what was the apparent cause of the hyperthyroidism in the case which I reported. There was no pelvic disease, so far as I could determine, previous to her pregnancy; but the patient was of a very neurotic family and a few years ago in the Iroquois Theater fire in Chicago lost two sisters and I believe her condition dated from that time. She had been under the care of a physician the previous year and had had tachycardia at that time and during pregnancy besides enlargement of the thyroid gland, which increased considerably from the time I first saw her until after delivery. After the delivery she had very decided von Graefe sign. The muscular weakness and tachycardia kept up and I have seen her a number of times but her circumstances were such that she could not take proper care of herself. She had the care of her baby and the household and being a neurotic individual it was almost impossible to do anything with her. I heard two weeks ago that she had consulted Dr. Babcock in Chicago, who found much the same condition. She has still her tachycardia and other evidences of exophthalmic goiter.

THE RECOGNITION OF THE PRE-NEURASTHENIC AND PRE-INSANE CONDITION IN THE YOUNG

A STUDY FOR THE GENERAL PRACTITIONER *

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Education is a response of the race to an environment. Elaboration of civilization creates a demand for longer periods of preparation for life-work. This preparation is necessarily irregular and its results are ragged. The ungraded rooms in the public schools and the constantly increasing number of private schools for subnormal children indicate an awakened consciousness concerning a certain group of these ragged results. There are other groups to which the attention of the home and school has hardly been called. I might add that the ordinary physician pays little more attention to these other groups than do the home and school authorities. I refer to the children who develop insanity or neurasthenia in after years.

This double problem may be stated as follows: First, does neurasthenia develop on a neural soil which should be recognized as such in early life? Second, are there certain types of children that furnish victims of insanities, of the dementia præcox, or manic-depressive and hysterical, groups which are clear enough to be described and recognized?

DeMoor defines abnormal children as "those afflicted with anything whatever that unfavorably affects their lives in relation to the social medium in which they live." This is, apparently, a broad enough definition and has furnished a basis on which special school-work has been instituted for the blind, deaf and crippled, the idiots, imbeciles and infantiles, those mentally subnormal or retarded, and the morally abnormal. It takes into account and provides for practically every kind of abnormality which is found present in children. Simple and efficient tests are at the hand of the investigator, by which he may locate easily the grade of deficiency in any given case. From none of the above-named classes come the inmates of our asylums, who suffer from such mental troubles as dementia præcox, mania, melancholia and hysterical insanity. These future sufferers spend their childhood among normal people and are generally considered normal.

In this discussion the Mendelian law of heredity will be laid aside.

It is tenable to believe, as a theory, that nerve stress is the only cause outside heredity for these and some other psychoses. Stress is removable when understood, or at least is theoretically removable. Insanity prevention fails because the stresses do not crop out until the disease is inevitable. This paper is an attempt to determine what young persons are of such types as will develop mental and nervous disease under later stress.

As I have worked over the literature and case histories, three rather distinct types have formed themselves in my mind. None of them are queer enough to be classed as abnormal at home or in school. All of them pass puberty with a definite handicap. They may be called the pre-neurasthenics, the pre-emotionals, and the pre-dements.

The neurasthenic adult is the result of a neurasthenic child or of a normal child plus exhausting illness. Natural juvenile neurasthenia is clear-cut. Its symptoms are as follows: On the physical side a general droopiness, poor standing balance, diminished expression in face, fulness under eyes indicating fatigue, other fatigue signs, as when arms are extended one is lower than the other and thumbs droop, twitching fingers, abdomen thrown forward when trying to stand erect; on the nerve side, marked inability to accomplish, due to mental, not physical fatigue, a mental apathy more apparent than real, abnormal sensibility to external impressions, such as sudden noises, etc.

The pre-emotional type shades into and is often combined with the neurasthenic type. Children of the latter type are usually well-formed physically, while those of the pre-emotional type may show various physical stigmata of degeneracy.

The general distinguishing features between the emotional and neurasthenic types are to be found in a study of the stimuli to which each type responds most readily. The young neurasthenic is seldom introspective. His stimuli are largely external. The future sufferer from mania, melancholia, hysteria, etc., responds to internal more than external stimuli. Fear, ambition, love, hate, sorrow, all provide internal reasons for outward reactions, which at times become so prominent as to be labeled "unnatural." His existence is sthenic, not asthenic. He has a large range of interests and he keeps them all going. He is versatile and capable, intense in what he does and thinks and vigorous in joy or sorrow.

The pre-dements are the mental shut-ins, physically well built and admirable while mentally un-understood. Apparently happy and care-free they often carry a hazy and terrifying knowledge of their own apartness from their associates. They are further characterized by a power to follow out their natural aptitudes with bril-

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

liancy, thereby covering up defects in their reasoning power and intellect, which may be immense.

Not easily fatigued, not emotional in the usual way, seized by fundamental emotions and held by them because of inability to react to further stimuli; unable to correct ideas by reason and observation, unable either to understand or to explain themselves, because of this massive bent or tendency of intellect which makes impossible the exercise of sound judgment; consciously, uncomprehendingly handicapped; kicking against the pricks of an intangible hindrance—these are the predements.

Here are three pictures of neural and mental types that are very different from each other, and I believe them to be fairly accurate pictures. The key to the preneurasthenic type is fatigue. The key to the preemotional type is instability. The key to the pre-dement type is internal strife. Do these types develop the future troubles named above in this paper? I do not know, but I believe so. The literature at my command tells me of none who do know. Can these types be studied and clarified so that teachers and family physicians may learn to recognize them as easily as they do now the abnormal child? I believe so.

Studying mosquitoes prevented yellow fever; eugenics seeks to prevent the production of abnormals in the future. A study of these types may lead to the saving of a little child in the present.

Exchange Building.

ABSTRACT OF DISCUSSION

DR. T. J. ORBISON, Los Angeles, Cal.: The point that Dr. Moore makes is apt and appeals to anyone who goes into the previous history and family history of any of these patients who come to us as dements or as neurasthenics or as psychasthenics. We can see them after they have developed, as Dr. Graves says in his paper, but it is getting at the earliest symptoms, when we can prevent them from having the cardinal symptoms, which is no doubt the important thing. I should like to speak of the work that is being done by Professor Witmer, who instituted the laboratory of experimental psychology at the University of Pennsylvania. They started the work six years ago; they have a complete laboratory and are taking these children and making tests which they will publish, no doubt, when they have sufficient data on hand. I believe that the education of the parents is one of the main things in this particular, and I believe that that education is being started. I recall two instances in which the mothers of the children referred to were the ones to take the lead in the attempt to find out what they could do for their children. One I know was willing to give up her only son into the care of a young woman who had been educated along the lines of child education. The other is likewise willing, and, in fact, she herself suggested that inasmuch as she was a particularly nervous person, as was her mother before her, it was better for her and the children to be apart. It is important that the parents shall take that view, and it seems to be up to us to direct them along those lines. I would like also to emphasize one other point, and that is the curability of certain types of dementia præcox. Five out of eight of my cases were cured and one remains almost normal. Two were acute. One was an acute dement with cyclical relapses. One was a hebephrenic. Those cases were taken early, and they have maintained their cure for several years. Others, of course, we cannot cure, as we all know; but the idea of the incurability of these patients, it seems to me, is not borne out when we can get them early, as we should do.

DR. G. WILSE ROBINSON, Kansas City, Mo.: When we take into consideration the fact that dementia præcox, next to manic depressive insanity, is the most common psychosis with which we have to deal, and when we also take into consideration the further fact that practically every case of dementia præcox, before the dementia develops, shows manifestations and symptoms that should at least cause us to suspect that such a condition will develop, it certainly behooves us to get busy.

As regards the personality and the characteristic symptoms that are manifested previous to the development of dementia præcox, I believe that the personality as described by Hoch as the "shut-in personality" is perhaps the most common. Such children live much to themselves. They are children who are hard to penetrate. It is a hard matter to get into their internal lives. They are children whom their parents and relatives do not understand. They are children who often are brilliant in a way, but they are unstable. Their nervous organization is unstable, perhaps in a nutritional way. They cannot stand long concentration. Many of them do not follow any particular occupation or any particular line of study with any perseverance. They jump from subject to subject, and these children, I believe, could be ferreted out and many of them could be saved if we had proper supervision of them. We have, in many of our cities, municipal school inspection, and we should have state-wide school inspection. These children that are peculiar, and children that are unusually brilliant should be investigated so that we may learn wherein they are defective, and then we should have the power of forcing parents to educate them or have them educated in a manner that will, in so far as possible, prevent the development of these psychoses and neuroses.

I believe such children ought not to deal much with abstract problems; they should deal more with the concrete. Instead of studying psychology, they ought to study pigs and chickens and work in wood and iron and things of that character. Some children cannot stand higher education. Many of them are educated into a hopeless state of dementia; and we should advise the children, and the parents should be advised, and if they will not follow the advice there ought to be some power whereby the state could force these children to take up the proper line of work. I have often said that there ought to be some law whereby insane patients could be protected from their fool relatives; and children that are predisposed to insanity ought to be protected from their foolish parents.

In regard to curing dementia præcox, I do not believe that any true case can be cured; allied conditions can be cured, I believe that such patients as are cured have not true cases of dementia præcox.

DR. C. L. ALLEN, Los Angeles, Cal.: I do not think we can exaggerate the importance of the subject which Dr. Moore has introduced. However, a great deal of caution is necessary, in interpreting these signs in children. We know that the so-called stigmata of degeneration are unreliable. Many people have one or more of them. The investigations of which Dr. Orbison spoke which in a psychologic way seek to estimate the mental make-up of children, are bound in time, I think, to prove of the greatest value. However, we also need a great deal of caution in their interpretation, and it will probably be a number of years before we are able to make up our minds on any definite standard.

As to the matter of education, of which Dr. Robinson has spoken, it seems to me that while all the laws of hygiene with regard to a child should be observed, the question of overwork should never enter into it. The child, as he suggests, should be out in the air a great part of the time and should be interested in things at hand; nevertheless, I cannot help but think that in some cases, at least, a properly directed education instead of being a disadvantage would be a benefit.

I have in mind the case of a young woman who, as a child, presented a great many neurotic symptoms, was hysterical, and showed certain traits which caused her parents considerable anxiety. Her father was a physician. It was noticed that this child was always better balanced and more contented when engaged in school work. She was never allowed to overwork, but she has been kept steadily at school, has since graduated at college, and the effect of the work has seemed only beneficial. I am of the impression that a continuance of this work cannot but redound to her benefit. The parents are very largely relieved now, and I bring the case forward as an instance of the fact that I think properly chosen work may be an advantage and a discipline rather than a disadvantage.

DR. C. R. WOODSON, St. Joseph, Mo.: The teacher, perhaps, should be instructed along these lines, and the parents should be instructed along the lines of trying to lead the child to bear disappointment well. The environment cannot be too good. The habits should be exceedingly regular. As their carrying capacity is not great, they should never be overloaded. The object or idea of rote learning should be condemned in unmeasured terms. The prodigy or the child disposed along those lines should be held back. The child who is defective should never be encouraged in the lines in which it shows great proficiency; in other words, the centers that are disposed to develop quickly should be held back, and an effort made to bring up the centers which develop slowly. The habit of parents and teachers of being abrupt with patients like these is very injurious. At the same time too much stress cannot be placed on the necessity of teaching the individual to bear disappointment well. I think that much more good is to come from the schools along these lines than from the medical profession. However, the profession and the school, as has been said, should be closely associated.

DR. WILLIAM J. G. DAWSON, Eldridge, Cal.: At the Glen Ellen Home in Sonoma County we have now 944 inmates of all grades. We have five school departments, but I believe in educating these people through their hands and their feet. It is the only way they can be developed to any extent. The parents do not think so. They want their children to learn to read and write, but there is very little progress made in reading and writing, comparatively speaking. We ought to start in early with the children in the public schools and find out the "defects" and the backward children. We have both in the Home. There should be a separate and distinct treatment for these backward children. They should not be mingled with the feeble-minded to the same degree that we have them up there; and it is a very important matter that the school teacher should early detect the trouble in the child.

DR. DANIEL CROSBY, Fruitvale, Cal.: Dr. Orbison is fortunate in the cooperation which he obtained in his cases. But the average parent will be found to be a stone wall, when you seek cooperation about a defective child. Unless the child is almost a fit subject for an institution for the care of defectives, the average parent will not acknowledge the necessity for special care and observation and teaching. In the schooling of the child, it is the teacher who has priority with the pupil, and it is in the psychologic and pedagogic departments of our normal schools and universities that the greatest effort must be made, looking to the training of teachers to recognize the exceptional child, and to the enlightening of the boards of education in the matter of the care and mental development of the mental irregular. It is a modification of the present plan, classification and training which must be accomplished by you neurologists through the boards of education and the teaching force of the state.

DR. DAVID S. BOOTH, St. Louis: There was one expression used by the author of the paper which I think is very misleading, although it is a common one, viz., "mental and physical fatigue," thus disassociating mind from matter. It is an expression generally used by the profession, and though well understood by the neurologist, it is misleading to the laity (if not to the average practitioner), who do not recognize the fact that general physical fatigue leads to "mental" fatigue; and that "mental" fatigue is an evidence of physical fatigue. In the treatment of these diseases, the error is often made of adding physical fatigue to the already present "mental" fatigue, which, instead of aiding the reparative process, only aggravates the original trouble.

DR. LOUISE PATTERSON, Vineland, N. J.: What we need is an enlightenment of the teacher along these lines. The teacher needs to have an opportunity to observe the grades of children, so that she may weed out those who are suffering from these conditions, and that they may be put where they should be; if they are feeble-minded, in an institution for the feeble-minded; if they are backward, in classes for the backward; and if they are neurotic, they may be sent to the physician. We also need physicians and medical inspectors who know something of the work and who go into it much more deeply than just finding out if the child has measles, or looking at its throat, or looking into its eye, or seeing if it has a discharging otitis media. We need physicians who will go deeply into this subject, and we need men and women who will care for these children and have them trained in the way they should be trained. We have a training school in our institution for both physicians and teachers. This has been going on for a number of years. It is not probable that many of you have ever heard of it.

DR. BERNARD OETTINGER, Denver: The point that we must reach in investigating these conditions is to feel the necessity of putting these children in a place where they will feel at home. We are probably learning to recognize earlier than heretofore, abnormal mentality of childhood, but when done, there are few suitable places for these children. We have an occasional home for the feeble-minded, but even in these care is not individualized. Workers who are constrained by their daily labor to do their physical utmost cannot well recognize an unusual condition in their children. Amongst another class, the father and mother are so busy looking after business and home that they do not recognize abnormality, while amongst the very rich, little personal attention is paid to boy and girl. The protection of those mentally inadequate has much to do with economic conditions, and with that comes the need for recognition and care by authority outside the family. They should live in colonies where mental stress can be removed by education suitable to mental development and absence of uneven family discipline and sentimentality. Unless I am mistaken, I did not hear from Dr. Moore whether he had any hopes of recognizing a preneurasthenic or a preinsane condition. I have never felt that I could, and I think after all this is for to-day merely a hope.

DR. ROSS MOORE, Los Angeles: We are establishing a school laboratory in Los Angeles along the lines of the Philadelphia laboratory for the study of children from the standpoint of their nerve and mental makeup, particularly the latter. The object of this paper was to make concrete three juvenile types of mentality who may be so brilliant as to seem normal and who in the future may become ill from preventable conditions. I hope to see in the future a series of questions or a mode of examination developed which will lead to an accurate knowledge of these types. There is one thing that goes back of the remarks made with regard to the education of the general public—the education of the general practitioner. These potentially substandard children slip through our examining rooms unrecognized. This is because the types of childhood on which mental or nervous disease engrafts itself are not concretely in the minds of the examiners as are the types of physical defect. It is my belief that if we neurologists will study to elaborate such types as have been hinted at in this paper we will do a great service to future generations by making possible the prevention of much mental and nervous disease.

A CASE OF ASCENDING PARALYSIS WITH RECOVERY

CHARLES W. HITCHCOCK, M.D.
Attending Neurologist to Harper Hospital
DETROIT

Patient.—The subject is a soldier in the infantry service U. S. A., aged 24, with negative family and personal history, who had had an army service of four years ten months and had served in the Philippines two years three months. There is no history of venereal disease or of venereal or alcoholic excesses.

Examination.—He was first seen by me in consultation with Major F. M. Hartsock, U. S. A., July 30, 1910, and had first reported at sick-call July 27, when he appeared rather dull, sallow in color and with a temperature of 100 F. and pulse 76. He was constipated, his tongue heavily coated, marked anorexia, and he presented the appearance of the onset of an acute infection. The spleen and liver were not enlarged. July 28, the Widal test was negative as also the urinalysis; on July 29 the patient had to be catheterized.

History.—He told me that July 22 he had noticed the first symptoms, feeling chilly and having some headache and he

thought he had some fever. During the last three days (July 27 to 30) his temperature had ranged from 99.8 F. to 102 F. and was at this time 100.2 F. with a pulse of 72, full, soft and regular. He had been vaccinated against typhoid some months previously. Two weeks before the onset of the illness he had been on a "hike" across country but had not been in contact with the sick and had been in no house where either child or adult was sick or paralyzed. He spoke of much backache, "in the small of the back," as among his first symptoms but complained of no other pains. He was examined in bed in the post hospital and seemed mentally clear. He could move one foot slightly and could move a little the toes of both feet but otherwise could not move his lower extremities at all. Though he said he had evacuated his bladder the day before, he was now totally unable to do so. There had been no bowel action on July 30, though good until then.

Course.—The knee-jerks were entirely abolished; the arm-reflexes were present and a trifle more quick than normal. There were no sensory changes.

August 3: The patient seemed comfortable but motor paralysis had distinctly advanced and extended to the trapezius muscle. The deltoids were involved but he still used hands and forearms. Electrical response of muscles was reported as very sluggish. The speech was fairly clear yet sounded a bit thick. Respiration is affected; has been as high as 36 per minute and there have been periods of quite typical Cheyne-Stokes respiration and also quite a degree of opisthotonos. The patient is able to raise the right arm somewhat but can use only the left forearm. His temperature came to normal August 2, and is practically normal to-day. He takes food pretty well; but some saliva escapes from the mouth.

August 5: The pupils are somewhat contracted. The bladder is still paralyzed and the patient has passed urine involuntarily. There has been a mild delirium and the infectious process seems to have involved the knee-joints which are slightly enlarged and quite tender.

August 7: The patient assures me that his knees are not the same as those I tackled before and that he has three now. When asked to show me the third, he recognizes that he has wandered mentally and corrects his error. Temperature is normal, pulse 68 and of good quality. There is some difficulty in swallowing.

August 10: For ten days a bedsore has been imminent but has been averted by care. To-day there are points of threatened trophic disturbance over heels and malleoli and these are carefully protected. He says he feels "as if all in" in his upper extremities and there is some retraction of the upper lip.

August 14: Patient can hardly use his hands at all or lift his wrists from the bed; there is twitching of the muscles of the face.

August 18: Patient is seen with Dr. Flintermann to-day; he has greatly improved in twenty-four hours; he raises his right arm very well, the left not so well and he also moves toes and feet better. The triceps reflex is absent, those of forearm and fingers present. There is still entire absence of the reflexes of the lower extremity. From this time on, there was gradual improvement, this being more marked in the upper extremities, though that in the right arm and left leg was especially noticeable.

September 11: There was a slightly spastic condition of the left arm and extension beyond an angle of 60° was painful, the bladder had resumed its functions and the bowels moved without aid.

October 7: A distinct thrill of the left quadriceps extensor is felt on tapping the left patellar tendon, though this is not discernible on the right side. The patient now uses the right hand and arm quite freely and normally, the left with more difficulty. The abdominal reflex is still absent. He moves the feet a little better but cannot draw up either leg or flex the knee.

November 17: The patient has improved much more in the upper than in the lower extremities. His hand-grasps are (relatively) right 40, left 30. Cremasteric response is prompt on both sides.

Jan. 3, 1911: There is still some rigidity of left arm. The activities of the lower extremities are still but slight, though improvement has been marked.

January 25: The left knee-jerk showed a positive, though faint return. The patient now flexes the left knee to about 60°, the right less.

He passed from direct observation and was discharged from the service February 22, but on March 17 he wrote that he had improved wonderfully, having about half the use of left leg. June 20: He wrote that the left leg would support about two-thirds of his weight and that he had been out for a ride.

In other words, this man's problem is the same as that of the patient slowly recovering from acute poliomyelitis, the restoration of the power of individual muscles or how best to make other muscles assume the burden of deficient muscles or muscle-groups, and this raises naturally the query as to diagnosis.

Obviously, here is a case of acute ascending paralysis, without true atrophy, with slight sensory phenomena and resembling in many respects the fatal case described by Landry in 1859. Is the case here reported a case of Landry's paralysis or is it merely an acute ascending paralysis, with improvement of muscle-groups involved taking place in reverse order and its ultimate status presenting the problems commonly seen in recovering cases of poliomyelitis? Is it not probable that many of the cases which have served to confuse the pathology of Landry's paralysis are only cases of acute poliomyelitis, in which the spinal cords, could they be examined, would reveal lesions of a distinctly inflammatory character, presenting quite a different pathologic picture from that in which Landry was unable to demonstrate any definite changes?

V. 5
1911

LARGE MULTIPLE PROSTATIC CALCULI AS A LATE RESULT OF PERINEAL PROSTATECTOMY

WALTER D. WEBB, M.D.
WASHINGTON, D. C.

History.—The patient, J. N., white, aged 68, with an unimportant family history, states that seventeen years ago (1894) he was operated on by Dr. Samuel Alexander in New York City, a perineal prostatectomy being performed. This was probably one of the first perineal prostatectomies performed in this country. For several years he was relieved of his symptoms with the exception of some incontinence, but for thirteen or fourteen years he has suffered wtih a return of the incontinence equal in extent to before the operation and frequent desire to urinate. For ten years he has had to wear a rubber urinal during the day and sleep with a glass urinal between his legs at night. He has never resorted to catheter life owing to the difficulty of its introduction. There is a marked alcoholic history. No erection since the operation in 1894.

Examination.—On admission to hospital, Sept. 20, 1911, examination showed an emaciated old man with large bony frame; arteries markedly sclerotic, beady, senile type; heart and lungs negative; temperature was elevated and pulse accelerated. His urine was alkaline, full of pus and mucus and a few red cells were present; there was a heavy trace of albumin and a few hyaline and granular casts. He complained of pain at the end of his penis, which was swollen and inflamed, from a balanitis set up by the irritation attending constant dribbling of alkaline urine. Residual urine 250 c.c., bladder capacity only 360 c.c. Urethra admitted a filiform sound with the greatest difficulty; attempts to introduce large sounds were resisted by obstruction in the usual site of the prostatic urethra. Roughness could be felt at this point, by moving the filiform. A follower was passed (No. 17 French) into bladder and a click could be felt which was interpreted to be due to a stone in the bladder. Followers (to include No. 24 French) were introduced; the urethra was found to be very tortuous.

A radiograph was taken which showed a large oval mass apparently in the bladder. There was a perineal scar and also a scar over the prevesical space above the pubes, accounted for by the fact that Dr. Alexander made a suprapubic opening in his early prostatectomies and depressed the prostate gland from above, pressing it into the perineal incision through which it was enucleated. Rectal examination revealed a hard, smooth, insensitive mass in the site of the prostate; median furrow and notch obliterated; no periprostatic induration; pelvic glands, not palpable. This led to the belief that the patient's statement about the prostate being removed was incorrect.

Operation.—Sept. 29, 1911, I opened the bladder by the suprapubic route expecting to find a vesical calculus, but much to our surprise the bladder did not contain a stone. Cystoscopy was not performed as a suprapubic opening was decided on after discovery of the stone by means of the *x*-rays. Projecting upward around the internal urinary meatus was a mass which, on palpation, felt precisely like an enlarged prostate with both lateral lobes symmetrically enlarged; this mass was hard but not more so than some malignant prostates. The interior of the bladder was smooth, free from concretions, no diverticula present. The internal urinary orifice was encroached on and had its longest diameter placed transversely.

A suprapubic prostatectomy was decided on and the usual incision was made through the capsule, which was found to be about one-fourth of an inch in thickness; the mass was then found to be composed of thirteen hard, faceted stones, the polished surfaces of which fitted accurately so as to form an oval mass. They were of phosphates, weighed 24 gm. and were in the site of the old prostate which had been removed by Dr. Alexander, by the perineal route, years ago.

Course.—As much of the capsule which contained the stones was removed as could be safely done and the patient has progressed uneventfully to an excellent recovery. One month later he was discharged from the hospital, passing a large free stream without obstruction; slight incontinence, free from cystitis and great improvement in general health.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

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W. A. PUCKNER, SECRETARY.

CIOSE.—Ciose is stated to be a dry, completely soluble protein product of beef, separated from extractives and containing 83 per cent. to 85 per cent. actual protein.

In the preparation of Ciose the minced washed fiber of fresh raw beef is subjected to digestion under the action of an extract of the fresh gastric gland and under conditions of time, temperature and reactions approximating to those of bodily digestion; the solution thereby obtained is sterilized by boiling and then filtered, and by this means the solution is freed from enzymes and from coagulable substances, and reduced to dryness in vacuo.

Ciose occurs in light, yellowish-white scales. It is easily soluble in water, forming a solution having a faintly acid reaction.

Actions and Uses.—The nutritive value of 500 Gm. of ciose corresponds approximately to 2,500 calories. The same quantity of milk represents 360 calories, of which 84 are due to protein and 89.4 to carbohydrates. Ciose is especially designed as a means of augmenting the protein of any desired diet. It may be added to soups and broths of beef, chicken, cereals, vegetables, etc., at the moment of taking; it may also be added to any prepared food, the protein of which it is desired to raise; or given in wine. It may be taken in hot water with the addition of salt, pepper, celery or any condiment.

Manufactured by Fairchild Bros. & Foster, New York. U. S. trademark No. 47,774. Not patented in U. S.

ENEMOSE.—Enemose is stated to be a sterile liquid containing approximately: the nitrogenous substances from beef and wheat, 12 per cent.; carbohydrates from wheat, 46 per cent.; ash (phosphates, etc.) 4.5 per cent.; in a non-coagulable, diffusible and assimilable form. Enemose is stated to contain the ingredients of normal salt solution, in amounts such that when diluted for use it has the composition of physiologic salt solution; also 1 part salicylic acid in 1,000 parts, or about ½ grain per fluidounce.

Enemose is stated to be free from fat, sucrose and alcohol.

In the preparation of enemose, lean beef and whole wheat are said to be subjected to the action of the gastric, pancreatic and intestinal mucosa extracts, the solution sterilized, clarified and concentrated. The carbohydrates thus obtained are said to consist of maltose and dextrins; the proteins present the entire group of derivatives of enzymic digestion beyond albumose.

Actions and Uses.—Enemose is a nutrient especially designed for colonic alimentation. The nutritive value of 500 Gm. of enemose corresponds approximately to 1,230 calories, of which 250 are due to proteins and 980 to carbohydrates. The same quantity of milk represents 360 calories, of which 84 are due to protein and 98.4 to carbohydrates.

Dosage.—Enemose is made ready for injection by simply dissolving in warm water at the moment required for use—1 volume (1 ounce vial) of enemose to 4 volumes (ounces) of water gives a solution of the following composition: solids, 12 per cent.; proteins, 2.40 per cent.; maltose and dextrins, 9 per cent.; ash, 0.9 per cent.

Enemose may be dissolved in hot water and allowed to cool to the proper temperature for injection.

Enemose is put up in vials, each containing 1 ounce, which should not be opened until required.

Manufactured by Fairchild Bros. & Foster, New York. U. S. trademark applied for. Not patented in U. S.

PHARMACEUTICAL PREPARATION ACCEPTED FOR N. N. R.

The following dosage form of an accepted proprietary article has been accepted for N. N. R.

Digalen Tablets.—Each tablet contains Digalen ½ Cc. (8 minims). Prepared by F. Hoffmann-LaRoche & Co., Basel, Switzerland (The Hoffmann-LaRoche Chemical Works, New York).

Therapeutics

BACILLARY DYSENTERY

One or two decades ago dysentery was recognized as a rather common disease characterized by frequent movements of the bowels, containing mucus mixed with blood, and accompanied by griping pains and rectal tenesmus, the pathologic lesion on which these symptoms depend being situated chiefly in the large intestine, the disease being regarded chiefly as the result of cold, and the treatment consisting of the administration of a laxative followed by astringents and sedatives.

Investigations made during comparatively recent years have demonstrated that some of these attacks of dysentery are caused by the presence in the intestine of a protozoon to which the name *Amœba coli*, or *Amœba dysenteriæ*, has been given. The disease caused by this ameba has been given the distinguishing title of "amebic dysentery." These cases have been observed principally in tropical climates, but recently they have been observed with increasing frequency even in cities of the temperate zone, due in part to the more careful examinations of the feces in cases accompanied by intestinal disorder, and in part to the presence in these cities of patients who have returned from the tropics incompletely cured, and who therefore act as foci of infection for the disease.

Other cases have been found to be due to a bacillus called *Bacillus dysenteriæ*, a term which at present seems to be applied to a number of different bacilli, which are distinguished as different strains, but, however, have close resemblances. The affection produced by this bacillus is known as bacillary dysentery, and is the form

of the disease most often seen in temperate climates. In the *Interstate Medical Journal*, September, 1911, appeared an exhaustive article by Dr. Frank S. Meara, of New York, on the treatment of this affection. The treatment that he finds most satisfactory is as follows:

Absolute rest is of the first importance, and should always be insisted on as soon as the diagnosis is made, no matter how mild the disease is. Rest is necessary for several reasons. It diminishes the metabolism which is needed to meet the demands of the body, which demands are increased by exercise. It also diminishes the activity of the bowels, as peristalsis is increased when the intestines are pressed on by the surrounding organs, on account of the contraction of the abdominal muscles during the upright position and walking.

A patient with dysentery demands as active and careful management by the nurse as one with typhoid fever. Therefore it is preferable that the bed which the patient occupies should be narrow and high, and that the springs should be stiff. The mattress should not be too hard, and should be covered by a folded blanket, if it is not smooth. Over this is placed the lower sheet, which is well tucked under the mattress. Over this sheet should be spread a rubber sheet wide enough to extend from the pillow to the patient's knees and long enough to be tucked under the mattress at either side. Over this should be placed a draw-sheet, which is folded lengthwise and placed across the bed so as to cover the rubber sheet. This may be readily exchanged for a clean sheet as often as deemed necessary. The patient lies on this sheet, and over him should be placed a sheet and one or two blankets.

The room occupied by the patient should be large, well aired, and should receive some sunlight, although, as this disease frequently occurs in summer, a room having the sunlight during the entire day is sometimes objectionable. The patient should receive a daily warm sponge bath, the water at a temperature of 110 F. One part of the body should be bathed after another so as not to uncover the entire body at once, and so that the patient may not become unnecessarily fatigued. Following the bath, a gentle alcohol rub should be given, and the back should be dusted with a bland powder. The mouth should be cleansed frequently, and often it is best to use some mild alkaline solution, like Dobell's solution (liquor sodii boratis compositus, N. F.). If there is considerable stomatitis, diluted hydrogen peroxid solution or a potassium chlorate solution may be used. If dryness of the mouth is very troublesome equal parts of a pure mineral oil and a 2 per cent. boric acid solution, with a little lemon juice, will be found useful.

Unless the illness is very mild, the patient should not be allowed to leave the bed when his bowels move, but the bedpan should be used whenever necessary. It should be warmed before being placed under the patient; a towel should be placed between it and the draw-sheet, and the patient should be assisted in raising his body by the hand of the nurse placed under his back. After the bedpan has been used the patient should be locally bathed, dried, rubbed with alcohol, and powdered.

The patient's body should not be allowed to become chilled, but should be kept constantly warm. An extra piece of flannel may be placed over the abdomen, and if the feet are cold, a hot-water bottle should be placed between the sheets at the foot of the bed

The diet is of great importance. During the early days of the illness the amount of food should be rather limited. Meara believes there is nothing better for patients with this disease than milk. It is bland, non-irritating, and non-stimulating to the intestinal tract, is readily assimilable, and leaves but little residue. The patient should receive a glassful every two hours, of which he may drink as much as he is able. The milk may be given raw or boiled. Many patients seem to do better if the milk is boiled; but some patients cannot take it readily when prepared in this way, and these may be allowed to take it raw. At the beginning of the disease, especially if there is fever, the milk may be diluted with one-fourth or one-third of the quantity of plain boiled water or rice water. The effect of the milk on the patient should be carefully watched, and if, on account of distress or flatulence, it seems to be not well borne, the possibility that the fat is not well digested should be borne in mind, and if this seems probable, the milk should be skimmed before it is administered. After the fever has gone and the stools have improved, the patient may take barley jelly and thoroughly boiled rice; later toast and egg, a chop, and, finally, the usual diet. It is better that everything the patient takes should be warm, for cold foods or drinks, or very hot drinks increase peristalsis. Water may be given frequently and in small amounts, but not too cold. To the few patients who cannot, or think they cannot take milk, barley water, rice water, egg albumin and thin chicken broth may be given. Milk-sugar may be added to suitable foods in order to increase the caloric value. If there is much gastric disturbance, it may be necessary to suspend all food temporarily.

It is an almost universal rule to commence the treatment of dysentery by the administration of a cathartic. Three drugs are in common use for this purpose: calomel, castor oil and salines. It is the belief of some physicians that calomel tends to increase the amount of blood in the stools. Salines and castor oil do not do this. Meara prefers castor oil, which he advises should be given in the following way: A teaspoonful of brandy, whisky, wine, lemon juice, orange juice, or peppermint water is placed in a small glass and the entire inner surface of the glass is moistened with this fluid. The castor oil is then measured into a spoon previously wet with hot water and added to the glass. Another teaspoonful of the menstruum is poured over the oil, and the patient is instructed to drink it quickly and wipe the lips, and then take the juice of a piece of orange or lemon. The dose of the oil should be half an ounce to an ounce. The oil should not be mixed with milk on account of the danger of the patient acquiring a distaste for milk.

The serum prepared by Shiga and also that of Flexner have not, up to the present time, given very satisfactory practical results.

Meara considers castor oil the most useful drug in the treatment of this kind of dysentery. He uses the prescription advised by Dr. Francis Delafield, of New York:

℞	Gm. or c.c.		
Olei ricini	10		fl. 3iiss
Phenylis salicylatis	2	or	gr. xxviiss
Tincturæ opii deodorati	1		♏ xv

M. et fac capsulas 15.
Sig.: One capsule every two hours.

In ordinary cases little medicine will be required in addition to these capsules. They should be given every two hours until the movements diminish in frequency; then every three hours; and with further improvement, every four hours. Meara believes that the improvement is due to the small doses of oil rather than to the opium, because he has found that very satisfactory results may be obtained many times without opium. Besides these

regular administrations of small doses of castor oil, a large dose should be given every second or third day, as at the beginning.

Of the saline treatment, consisting of the administration of sodium sulphate or magnesium sulphate in doses of half an ounce or an ounce, followed by dram doses every two, three, or four hours as improvement occurs, he speaks with somewhat less approval.

Large doses of ipecac he has rarely seen used, and believes that good results are not frequently seen in temperate climates. This may be due to the fact that very severe cases are not common, so that heroic treatment is not often demanded, and perhaps in part also to the fact that our physicians do not acquire skill in employing this treatment.

Among the most important symptoms which demand consideration are the griping, colicky pains and the incessant, nagging tenesmus. These may be relieved by local applications or by drugs. For local application nothing is more efficient than heat. It may be applied in the form of hot fomentations, turpentine stupes, or thin poultices. Squares of flannel wrung out of hot water may be applied to the abdomen and covered with dry flannel. Turpentine stupes are prepared by adding a teaspoonful of turpentine to the hot water from which the flannels are wrung, or the turpentine may be sprinkled on the flannel after it has been wrung out of the hot water; or, a bit of absorbent cotton wet with turpentine may be rubbed lightly over the abdomen. If the turpentine is carelessly applied, it may cause burning of the skin.

Warm rectal irrigations at a temperature of 100 to 105 F., either of plain water or of physiologic saline solution, are recommended, but they should generally be avoided in mild cases, on account of the danger of increasing peristaltic action and exciting movements.

For the tenesmus nothing is equal in value to the local application of opium or morphin. Opium may be combined with belladonna as in the following suppositories:

℞	Gm. or c.c.		
Opii pulveris	.065		gr. i
Extracti belladonnæ foliorum	.015	or	gr. ¼
Olei theobromatis	2		gr. xxx

M. et fac talia suppositoria 10.
Sig.: Use as directed.

Or the opium may be used in the form of laudanum combined with starch mucilage, 1 c.c. (15 minims) being added to an ounce or two of the starch preparation.

If the pain and tenesmus are not removed by these methods of administration, morphin may be given hypodermatically. When this is resorted to, caution must be exercised lest the drug habit be acquired. As in giving castor oil, so in giving opium or morphin, it is better not to tell the patient the drugs he is receiving.

Numerous drugs have been advised for the diarrhea. They may be classified as astringents, local sedatives, and opium. Astringents are objectionable, Meara believes, because of their effect on the protoplasmic substance of the cells, which action threatens their integrity. Of the sedatives, bismuth is most largely used. Whether it acts as an astringent or by coating over the mucous membrane seems to be undetermined, but that in large doses it does real good cannot be doubted. As much as 2 gm. (30 grains) should be given every two hours. It should not be given continuously without giving an occasional dose of castor oil or salts, for large masses of bismuth may collect in the bowel and cause obstinate constipation, even if it does no further harm.

Opium is most useful. It diminishes peristalsis, pain and tenesmus. As a result the frequency of the stools is diminished, the patient gets relief from pain, and sleeps. It should never be used until the bowels have been emptied by a cathartic. It should be used in small doses, and, as above stated, the patient should not know what he is taking.

While most patients recover in from a few days to a week, or a little more, a certain number continue for several weeks, and then they either recover or the disease becomes chronic. In the chronic form opium should be given with great caution. In these cases the use of irrigation is more valuable than in the acute cases; yet at the same time care must be used that the local treatment by irrigation is not continued too long so as to perpetuate the trouble by the treatment. For irrigation simple warm water may be used, or better, a mild saline solution prepared by adding a level teaspoonful of salt to a pint of water of a temperature of 100 F. About two quarts of water may be used at a time.

The irrigation may be followed by an astringent, of which the best is nitrate of silver. Meara advises its use in increasing strengths, commencing with 1 in 2,000 and increasing up to 1 in 500 or 300. Of this one or two pints may be used. If the salt solution has been first used, it must be all removed from the rectum, or the silver will be neutralized by it. If the silver solution causes pain, it is too strong, and should be quickly neutralized by the injection of salt solution. If the whole of the nitrate of silver solution does not seem to have again passed out of the tube after it has been retained in the bowel as long as the operator decides, viz., a few minutes, saline solution should be injected into the bowel to neutralize and render the silver salt harmless. Nitrate of silver treatment should be given at first daily in gradually decreasing strength, and then only intermittently, perhaps every three or four days for a few times.

This daily use of nitrate of silver as recommended by Meara seems rather strenuous. The use of nitrate of silver once in three or four days will often be found sufficient.

Protracted dysentery is often due to ulcers in the rectum. In these cases the proctoscope or sigmoidoscope should be used in order, if possible, to locate the ulcer and to treat it locally either by a 25 per cent. solution of nitrate of silver or by the solid stick.

Patients who have chronic dysentery often improve with change of air and environment. In these cases the diet is of great importance. The patient loses flesh and strength, due partly to pyrexia, partly to toxemia and partly to starvation. Two quarts of milk is hardly sufficient for prolonged feeding of an average-sized man. It is necessary to add to it. Eggs or chopped meat may be offered; a little sugar or milk sugar is often a useful addition; and cereals may often be used with benefit, such as barley, rice, farina, bread and butter and cereal soups. Later a small chop will be found to be easily digested. Beef, mutton, chicken and potatoes leave little residue and often prove beneficial. Still later some of the green vegetables, such as peas, or small string beans may be added. These additions should of course be made tentatively, and should not be continued, if they do not seem to benefit the patient.

As this disease, like typhoid fever, is water-borne, the same caution in regard to the care of the stools and of bedding soiled by the discharges should be used as is advised in typhoid fever.

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[For other information see second page following reading matter]

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THE ISLET THEORY OF DIABETES

It is now over ten years since the theory of the dependence of human diabetes on functional insufficiency of the islands of Langerhans was brought forward, but, attractive as the hypothesis is, there is not yet unanimity of opinion as to its validity. Even the fundamental matter of the independence, anatomically and functionally, of the islets has been doubted by some who have found reasons for believing that the islets may merely represent pancreatic tissue in certain stages of functional activity, development or regeneration. Pathologists also have observed that lesions of the islands of Langerhans might exist without the presence of glycosuria. In many cases of fatal diabetes no lesions of the islands could be found. While such findings have led some to the belief that these structures had nothing whatever to do with diabetes, they have led more to take the middle ground that, though in many cases diabetes depends on lesions of the islets, yet there probably are other cases in which true diabetes occurs independently of islet lesions. From review of the recent literature, however, the impression is obtained that the case in favor of the islet theory is steadily growing stronger.

In an elaborate study of the islet tissue in the pancreas of the guinea-pig, in which new histologic methods play an important part, Bensley[1] entirely demolishes the theory that the islets are mere transitory structures derived from or changing into acinous tissue according to conditions of general nutrition or pancreatic activity. He also shows that much, if not all, of the study of the number of islands in either normal or diabetic pancreases recorded in the literature is entirely valueless, for it is based on the assumption that the number of islets in corresponding parts of different glands is approximately the same, which is entirely contrary to the fact. By special staining methods it was found that the total number of islands in the entire pancreas of a guinea-pig may vary between 15,000 and 45,000, and the average number per milligram of pancreas averaged in different animals from 9.5 to 189. An equally great variation in the number of islets exists between corresponding areas in different glands.

1. Bensley: Am. Jour. Anat., 1911, xii, 298.

On the experimental side we have the important observations of MacCallum,[2] who ligated off a portion of the pancreas of a dog and let it atrophy until nothing was left except islet tissue. On removal of all the rest of the pancreas no diabetes resulted, but subsequent removal of the atrophied remnant was at once followed by severe glycosuria. Granting the correct identification of the residual tissue as islet tissue, nothing could more conclusively demonstrate the dependence of carbohydrate metabolism on the islands of Langerhans than this experiment. The only objection is the lack of identification, by means of specific staining reactions, of the residual tissue as being exclusively islet tissue. Now that we have such specific stains worked out and their value established, according to Bensley, it would seem possible to perform this experiment in a manner leaving no room for doubt or dispute.

On the pathologic side the most positive statement yet made comes from Weichselbaum,[3] as the mature conclusion based on many years of study, including the examination of the pancreas in 183 cases of diabetes. In every one of this great series Weichselbaum found distinct and characteristic lesions in the islets, while in an even larger series of control cases, representing many different diseases, no corresponding changes were found. The lesions which he finds are of three chief types. Hydropic degeneration is of these the most frequent, and it is observed especially in diabetes in young persons, usually of the type associated with emaciation and other severe manifestations. This sort of lesion is easily overlooked, especially if the tissue has not been properly preserved and prepared, which probably accounts for the cases in which the islands have been said to be normal in fatal diabetes. Next in frequency is the sclerotic and atrophic type of islet, which is often associated with the third type of lesion, hyaline degeneration. Both these forms are usually associated with arteriosclerosis, and are found especially in old persons, oftenest in those whose diabetes is of the "fat" type. In some cases a considerable degree of compensatory hypertrophy or regeneration of islet tissue is also observed, but apparently in the diabetics this has not been sufficient to compensate fully for the loss of the original islet tissue. In view of the constancy of his findings, the abundance of controls and the repeated observation that even extreme atrophy of the acinous structures of the pancreas is not associated with diabetes when the islets are intact, Weichselbaum's work would seem to be almost conclusive in establishing the islet theory of the etiology of diabetes. As to the cause of the islet lesions themselves, in the sclerotic and hyaline types of islets the lesions are in most cases secondary to arteriosclerosis, and sometimes the result of an interstitial pancreatitis from occlusion or infection of the

2. MacCallum: Johns Hopkins Hosp. Bull., 1909, xx, 265.
3. Weichselbaum: Wien. klin. Wchnschr., 1911, xxiv, 153; abstr. in THE JOURNAL, March 11, 1911, p. 785.

V. 191

ducts; but Weichselbaum is unable to explain the more important hydropic degeneration, beyond offering the suggestion that hereditary developmental deficiency may render the islets abnormally susceptible to toxic influences.

THE FIFTEENTH INTERNATIONAL CONGRESS ON HYGIENE AND DEMOGRAPHY

For nearly half a century international sanitary congresses have been held in foreign countries and have been instrumental in furthering comity among nations and in the prevention of disease. By authority of a joint resolution of Congress, the President of the United States in 1907 invited the International Congress on Hygiene and Demography, then holding its fourteenth session in Berlin, to hold its next session in this country. The invitation was accepted, and the fifteenth international congress will meet in Washington, D. C., next September. Invitations to participate in the congress have been extended by the President to foreign countries and to the several states of the Union. Thirty-five states, so far, have accepted the invitation.

In connection with the congress it is proposed to hold an exhibition illustrating the present status of public health and vital statistics in this country and its territorial dependencies. In view of the great strides made in preventive medicine, the awakening of public interest in hygienic measures, the increase effected in the habitable area of the earth by the sanitary measures instituted by the federal government in the Canal Zone and the territorial dependencies of the United States, together with the imperative need for cooperation in public health matters, the holding of this congress and exhibition must be regarded as an important event in the history of sanitation in this country. The success of the recent hygiene exhibition at Dresden is the subject of current comment. Unfortunately, this country was not represented at the Dresden exhibition; but an opportunity now presents itself for repairing this omission.

In a country such as ours, the rôle of popular education in molding public opinion is of special importance. No exhibition dealing with the general field of hygiene and vital statistics has ever been held in the United States, and yet there are momentous questions of public health on which concerted action is imperatively required.

The problems of the extension of birth and death registration, the prevention of infant mortality and of industrial diseases and accidents, tuberculosis, typhoid fever and hookworm disease, the pollution of interstate waters, and many others of national interest, at once suggest themselves whenever the subject of public health is mentioned. Moreover, the results of efficient sanitary supervision in the territorial dependencies of the United States and the Canal Zone have been so striking, and the lesson of what can be accomplished under climatically adverse conditions is so forcible, that the exposition of these methods cannot but lend powerful emphasis to the propaganda for greater uniformity and the extension of preventive measures against disease. All these and kindred topics are to be illustrated at the contemplated exhibition.

In view of the great good that this congress and exhibition may be expected to accomplish, it becomes the manifest duty of states, cities and unofficial agencies engaged in the promotion of some phase of the public health to cooperate heartily in the furtherance of this project.

PROPRIETARIES—FRAUDULENT AND OTHERWISE

Do the members of the Association really understand the distinction that exists between proprietary remedies which have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies and those which have not been so accepted? This question is prompted, in a general way, by letters received at various times from physicians who seem to have more or less hazy notions on this point. Specifically it is prompted by a letter from the editor of a high-class medical journal discussing the question of admitting or rejecting advertisements of proprietary remedies to medical journals in general. In his letter, the editor stated, in effect, that he was unable to see that there was any difference between the proprietary preparations advertised in THE JOURNAL of the American Medical Association and those advertised in two or three other high-class journals that admit to their pages such nostrums as Antikamnia, Phenalgine, Ammonol, Anasarcin, Campho-Phenique, Papine, *et hoc genus omne*.

Such an evident ignorance of fundamental principles governing the propaganda for reform in proprietary medicines is, coming from such a source, as remarkable as it is discouraging. For the enlightenment of those who, similarly, are unable to distinguish between the two classes of proprietary remedies referred to, the following brief explanation may prove of value: All proprietary preparations approved by the Council on Pharmacy and Chemistry and eligible to inclusion in New and Nonofficial Remedies have been carefully investigated and found to have some presumable value and to be advertised and sold to the profession under truthful claims; most proprietaries that have not been thus accepted are those which, on investigation, have been found to be either fraudulent, worthless or exploited under false and exaggerated claims—in many cases all three. There are a few proprietaries which, while eligible for inclusion in New and Nonofficial Remedies, are not to be found listed, because their manufacturers are opposed to the work of the Council and have not submitted the products—and, incidentally, will not until the medical profession compels them to. The number of such preparations is so small as to be negligible. It is plain then, that the distinction between the products listed in New and Nonofficial Remedies and those not so

listed is fundamental and vital, and is one in which is involved not only the question of scientific therapeutics, but, what is of greater moment, the safety of the public.

The fact is that medical journalism is ten years behind the procession. A few medical journals—three or four independent publications, nine or ten state journals and THE JOURNAL of the American Medical Association—have taken an attitude with reference to proprietary medicine advertising that lay journals of the better class have long taken with regard to general advertising, namely, to exclude from their advertising columns things that are in themselves against public interest or that are, directly or indirectly, harmful to their readers. On the subject of proprietary medicines it requires no argument to demonstrate that remedies which are exploited under false claims and whose composition physicians have no means of knowing, are not only harmful to the readers of medical journals—physicians—but are also, through physicians, a menace to the public.

The enormous business in worthless and fraudulent proprietary medicines is an artificial one. It has not been a healthy growth of products that are worthy and which fill an actual need, but it has been forced by hothouse methods to its present rank growth. By subsidizing medical journals through the purchase of advertising space, thus making it practically impossible to give general publicity to the worthlessness of the products and the heartlessness of their exploitation, by the lavish distribution of free samples—by these, and other devious methods, a spurious value has been given to things that in themselves have neither merit nor honesty.

When the truth—and only the truth—is told about proprietary medicines the evils now connected with that business will disappear. But the truth will never be told so long as the bulk of the medical press is under the blighting influence of proprietary interests. And the press will remain under that influence until the medical profession asserts itself and demands that the advertising pages of those journals that are devoted to their professional specialty shall be as clean and free from fraud as are the lay magazines for which they subscribe. The whole question, therefore, resolves itself into one of responsibility on the part of individual physicians. So long as physicians will support medical journals that, to all intents and purposes, are subsidized by the exploiters of fraudulent proprietary medicines, so long will fraudulent proprietaries flourish — and no longer.

THE QUESTION OF THE MULTIPLICITY OF ANTIBODIES IN THE BLOOD

The various antibodies of the blood are commonly supposed to be separate and distinct substances. The reasons usually given for this view are: (1) the great variation in their manifestations such as precipitation, agglutination, lysis, complement deviation, anaphylaxis, etc.; (2) a lack of correspondence in the so-called antibody curves in disease and in artificial immunization; (3) differences in concentration in the body fluids, as exudates, serum, lymph and cerebrospinal fluid; (4) presence of one or more antibodies in the blood with absence of others; and (5) the differences in susceptibility to light, heat, standing, etc.

The view that at least certain of the immune reactions are only different manifestations of the same antibody has not lacked adherents. As early as 1891, Elfstrand noted that crotin was hemolytic for rabbit blood, but caused only agglutination of the blood of the pig. In this case a difference in the two kinds of blood is a more natural assumption than that of different substances in crotin. Again such phenomena as agglutination and precipitation may be due to simple adsorption and neutralization of electrical charges of particles in suspension or colloidal solution with resulting precipitation, while further action, such as lysis and protein splitting, would take place only in case of further chemical action.

While it is true that the antibody curves show certain serums to vary in their power of lysis, agglutination, etc., still, in general there is a marked similarity in their course and it is possible that further work on the physical chemistry of ferment activity will result in another explanation for these differences as well as for the other facts given above. There is a growing analogy between certain immune reactions and ferment activity. Recently Friedberger[1] has produced evidence to show that even the action of tetanus antitoxin is due to its protein-splitting power. In the light of the present conception of ferments as dissociable electrolytes governed in their action by the conditions of the medium containing them,[2] it is not unreasonable to assume that a single immune body might vary in its manifestations in different mediums.

We must conclude, therefore, that while there is much evidence in favor of the separate identity of antibodies, the question cannot be settled definitely at present.

FEDERAL AND STATE COOPERATION CONCERNING FOOD AND DRUGS

At the New Orleans meeting of the Association of State and National Food and Dairy Departments, in 1910, a committee on cooperation was appointed for the purpose of devising a practicable and workable plan of cooperation between the states and the federal government, and between the states themselves, for the enforcement of the national and state food and drugs laws. This committee, after much deliberation, made its report at the Duluth meeting of the association in August of this year. This report was unanimously accepted and now awaits the final ratification of the secretary of the United States Department of Agriculture.

1. Berl. klin. Wchnschr., 1911, xlii, 1880.
2. Michaelis: Biochem. Ztschr., 1909, xvii, 231; 1911, xxxv, 386; 1911, xxxvi, 280.

As indicated by resolutions adopted, the committee believes that concerted action will advance drug control throughout the country and render the sale of fraudulent and fake medicinal preparations increasingly difficult, if not impossible. It recommends that commissioners be urged to prepare circulars of confidential information concerning illegal products and medicinal preparations and send them to officials in other states, and to the federal authorities. The Secretary of Agriculture is also requested to send to all collaborating officials confidential information concerning matters affecting the enforcement of the national Food and Drugs Act.

The report further recommends collaboration between state and federal bacteriologists and microscopists on the same basis as the existing collaboration among the state and federal chemists, which has brought about a uniformity of standards, methods and technic in the examination of foods and drugs. A permanent committee on cooperation is provided for, and the committee's report ends with a recommendation of a simplified method for collaborating officials to bring about the enforcement of the national Food and Drugs Act, with the elimination of much red tape that has hitherto hindered and obstructed the state officials in acting under the national act.

It is believed that adoption of the committee's plan for effective cooperation between each state and the federal government and between the several states will result in real food and drug control, making it increasingly difficult for the adulterators and sophisticators of foods and the fakers and swindlers in drugs and nostrums to find a market for their illegal wares, and thus not only the pocketbook, but also the health of the public will be correspondingly conserved. The committee has notified the commissioners of the various states that the proposed cooperation between the states should be immediately effective, and already confidential circulars of information have been passed between the various state departments, the first one coming from Kansas conveying information of vital importance and interest to the food and drug control officials. This is real, human conservation.

The action of the federal government in respect to uniting with the states in this progressive movement for better food and drug control is awaited with interest.

THE METABOLISM OF CERTAIN MICROORGANISMS

The microorganisms, under which we include bacteria, yeasts and molds, form a group of living forms that are important to the physician not alone in their direct association with disease, but also and equally on account of their relations to numerous processes, deleterious or beneficial, connected with every-day life. The word "fermentation" recalls disturbances of alimentation, the decay or spoiling of food-products, the production of familiar alcoholic beverages and distilled liquors, and the raising of bread—to cite only a few diverse illustrations. But aside from such considerations, apart from the fact that these lower living forms are incessantly concerned in the intestinal digestive functions, a knowledge of the nutritive phenomena of the microorganisms is important because it is likely to throw light on comparable reactions in higher types. Indeed, the late Sir Michael Foster remarked not long ago that "the frog and the myograph, the dog and the kymograph are no longer the alpha and omega of physiology."

One of the salient features of this newer knowledge is the fact that those now well-known ultimate cleavage products of the proteins, the amino-acids, form the natural nitrogenous food-supply of the microorganisms. For the higher animals it has lately been assumed that the amino-acids formed in digestion are resynthesized, according to Emil Fischer's scheme, into complex polypeptids and thus reproduce the specific proteins of the species involved. Such a theory will not, however, hold for the microorganisms; for they manage to build new protein and meet their nitrogen requirement on a *single* amino-acid. Abderhalden and Rona[1] have shown that certain molds produce normal tissue protein when grown on media containing quite different amino-acids. From this we may conclude that the amino-acids themselves experience a further disintegration by the microorganisms, and that protein synthesis by them is accomplished from still simpler nitrogenous fragments.

Conclusive evidence in favor of the cleavage of amino-acids incident to assimilation of nitrogen in these lower plants has been furnished by the investigations of Felix Ehrlich.[2] In the case of the fermenting yeast, for example, ammonia is liberated from amino-acids, leaving a non-nitrogenous complex in the surrounding medium. Thus for the first time such products as amyl alcohol and other "fusel oils," succinic acid, etc., which were long vaguely regarded as "side-products" in the decomposition of the fermented sugars, have in reality been recognized as typical direct derivatives of proteins in fermentation. Amyl alcohol thus is the fermentation product of leucin, as ethyl alcohol is the comparable representative of sugar. The list of these characteristic compounds is rapidly being enlarged. The underlying feature is the construction by microorganisms of typical protein from ammonia and sugar as the primary sources of organic nutriment, fusel oil and its companions being the unutilized chemical débris, so to speak, of the denitrogenized amino-acid fragments. The nature of the ultimate synthetic process, i. e., how ammonia and sugar unite for protein construction, is still unsolved; but products long involved in obscurity at length appear in a new light, and we can now speak of an actual "fermentation" of amino-acids by yeasts and molds in a new sense.

1. Abderhalden and Rona: Die Zusammensetzung des "Eiweiss" von Aspergillus niger bei verschiedener Stickstoffquelle, Ztschr. f. physiol. Chem., 1905, xlvi, 179.

2. Ehrlich: Ueber die Bildung des Pflanzeneiweisses bei Hefen und Schimmelpilzen, Biochem. Ztschr., 1911, xxxvi, 477. References to earlier work will be found in this paper.

ENGLAND ADOPTS INDUSTRIAL INSURANCE

After months of debate in Parliament and of discussion, often growing into acrimonious controversy in the public press and the medical journals, Lloyd-George's industrial insurance bill has passed both houses of Parliament. This measure, probably the most important single piece of British legislation in the last half century, was introduced by the Chancellor of the Exchequer in May of the present year. Its progress has been marked by protracted debate, frequent conferences and numerous amendments. It has been the endeavor of its promoters so to modify it as to make it acceptable to as many interests as possible, although it has been recognized that so revolutionary a law could hardly receive unanimous support. The proposed amendments were so numerous that it is impossible, at present, without a copy of the bill as passed, to discuss its exact provisions.

Medical interest centers principally around the six cardinal principles, formulated at the special meeting of the representative body of the British Medical Association, which body, with its branches, has naturally taken an active part in the discussion. On the most important point, viz., the income limit, the bill, as it passed on third reading in the House of Commons, evaded the point, but authorized the local insurance committee in each district to fix the limit. This is apparently a recognition of the fact that $10 (2 pounds) a week income in one part of the British Isles may entitle a workman to the privileges of the bill, while the same income in another locality may indicate a much greater degree of material prosperity. While economically more just than an arbitrary limit, there would seem to be, in this provision, abundant opportunity for differences of opinion between physicians and local committees. The second requirement of the Association, that the medical benefit should be administered by a local committee and not by the friendly societies, was also observed, in effect. Free choice of doctors by patients, the third condition, is also secured. The three remaining principles, the settling of the method of remuneration for physicians in accordance with the preference of the majority of physicians in each locality, the fixing of the rate in a similar manner, and the adequate representation of physicians in the administration of the law, are all left largely to the discretion of the insurance committees, subject to some general restrictions.

Probably it was far wiser, and will, in the end be more effective, to make the law as elastic as possible. The future will determine what is best, as well as what effect this measure will have on the medical profession —the question to the discussion of which, naturally, much space has been given in British medical journals. This bill and its future workings are deserving of careful study by American physicians, economists, sociologists and legislators. We are far removed from the industrial condition now existing in England, of which a recent writer said: "In London to-day, able-bodied men stand all day in the streets selling flowers for a few pennies, strong men sweep crossings, run errands, do anything to earn a few coppers." Yet we, too, are beginning to realize that the conservation of human life and energy, through the elimination of preventable illness, is a social and not an individual task, and that the protection of its citizens from waste and loss due to disease is as much a duty of the state as is protection against an armed foe from without. In England, the state is beginning to care for the working man or woman who is ill or injured. In this country, our efforts, so far, have been in the direction of the prevention of disease and industrial accidents. Which plan will give the better results in the end remains to be seen. Prevention is, without doubt, more rational than enforced treatment, but it also requires a greater amount of popular education. The results of the administration of this law will be watched with keen interest by all students of social conditions on this side of the Atlantic.

Current Comment

THE CANAL ZONE AN IDEAL HEALTH RESORT

Again the report of the Department of Sanitation of the Isthmian Canal Commission leads one to marvel at the almost incredible result of trained, scientific effort to control disease, as well as at the dense stupidity of a people who, with such an object-lesson before them, will not profit by it to save their own lives and those of their wives and children. Cold figures in official reports are inadequate. One must visualize the facts and clothe them with flesh and blood in order to realize their meaning. The report of the Department of Sanitation for October, 1911, shows that during that month there were 37,496 colored and 12,316 white employees at work on the canal and railroad. Thirty-three colored employees died of disease and six from violence, a total of thirty-nine deaths, or an average annual rate per thousand of 12.48. This is the death-rate for October for nearly thirty-eight thousand negro laborers, working in what was, a few years ago, the pest-hole of the tropics. The death-rate for the United States for 1910, for all classes and climates, was 16.1, nearly 4 deaths per thousand higher than the death-rate for the poorest class of laborers in the Canal Zone. Among the white employees, numbering 12,316, five died from disease and two from violence, a total annual death-rate of 6.82 per thousand. Returns from the 1910 federal census show that the American city having the lowest death-rate in 1910 was West Orange, N. J., where the death-rate was 8.5, while the highest death-rate, that of Charleston, S. C., was 29.7, or over four times the rate among white employees on the Isthmus. It is true that in any city infants and the aged, not to speak of the chronically diseased, help to swell the death-rate, whereas the employees on the Isthmus are men in the working period of life; yet this comparison only shows

V. 5
1911

the progress that has been made since the Isthmus came under control of American sanitary officers. A survey of the death-rate among the white American population, including women and children, gives even more conclusive proof of this achievement. Of the seven white employees who died in October, only one was an American, a man aged 44, who died of chronic nephritis. The only other death among white American men, women and children in the Canal Zone during the month of October was that of a child, aged 15 months, who died of peritonitis. Think what this means! Nearly twelve thousand white men, women and children from the United States—11,839, to be exact, these figures including about four thousand of the white employees previously mentioned—are living happily, comfortably and safely in what was, a few years ago, a hot-bed of disease —and the annual death-rate among them, as indicated by the deaths for October, was 2.03 per thousand. And yet the League for Medical Freedom, headed by Senator Works, demands that the President revoke his order limiting the right to treat disease on the Isthmus to properly educated persons, and that the wonderful results secured by the toil and sacrifice of devoted, clear-headed scientific men be surrendered at the behest of deluded and uninformed religious enthusiasts. Truly, the physicians who have made possible such results in the Canal Zone would have a far better right to call themselves "Christian Scientists" than have the persons who masquerade before the public under this name, since the life-saving work of Colonel Gorgas and his assistants is, in the highest sense, both Christian and scientific.

SENATOR OWEN AMENDS HIS BILL

Objections to Senator Owen's bill for a national department of health (Senate Bill No. 1) have come largely from followers of various sects and cults who feared that their business of treating the sick might be interfered with. Many of the more sincere opponents of this much-needed law are evidently too ignorant to understand that Congress can exercise only those powers which have been delegated to it by the states, that the regulation of the practice of medicine stands on the same basis as the regulation of other occupations and trades, which is not a function of Congress, and that any federal law attempting to regulate the practice of medicine in the states would be void. Repeated explanations have been made that Congress has no authority to regulate the practice of medicine or any other profession or calling in any state, and that the object of the Owen bill was the prevention and not the treatment of disease. Apparently, these explanations have not been convincing —perhaps some people have never heard of them. To reassure those who are honestly opposing the Owen bill on account of such a misconception, Senator Owen last week introduced the following amendment to his bill:

"That the Department of Health established by this act shall have no power to regulate the practice of medicine or the practice of healing, or to interfere with the right of a citizen to employ the practitioner of his choice, within any state of the Union, and all appointments within the department shall be made without discrimination against any school of medicine or of healing."

It is to be hoped that this amendment will be retained as a part of the bill, although it is entirely unnecessary from a legal standpoint, since it declares that it is not the purpose of Congress to do what it has no right to do. This fact is undoubtedly recognized by Senator Owen, so that the amendment must be intended to remove any possibility of honest objection to the bill. This amendment will doubtless quiet the fears of honest but misguided opponents of the measure, since, after the incorporation of this statement, the only persons who can oppose the measure will be those who have a selfish and mercenary objection to its passage.

SOME OFFICERS OF THE NATIONAL LEAGUE FOR MEDICAL FREEDOM

So many inquiries have been received for information regarding the National League for Medical Freedom that it has seemed worth while to collect such matter as has appeared in THE JOURNAL and issue it in pamphlet form.[1] As a preface to this reprint, some biographic information is given regarding certain officers of the league. We reproduce this matter herewith, as it may help explain one of the many reasons for the opposition shown by this organization to the American Medical Association and its activities:

B. O. FLOWER, Boston: President and one of the founders of the National League for Medical Freedom. Flower is ex-president of the R. C. Flower Medicine Co., a mail-order medical fake, founded by the notorious quack and swindler, R. C. Flower. R. C. Flower is a "graduate" of the notorious American Health College recently exposed in THE JOURNAL in connection with Carson, the Kansas City quack. While B. O. Flower was owner and proprietor of the *Arena*, that magazine carried advertisements of such frauds as the J. L. Stephens morphin cure (exposed in "The Great American Fraud"), the New York Institute of Physicians and Surgeons (put out of business by the government and exposed in "Nostrums and Quackery"), Welch's Magic Tea, Trilene Tablets, Clark's Rheumatism Cure, etc. His later magazine, the *Twentieth Century*, advertised that preposterous fraud, the "Oxydonor," exposed in THE JOURNAL and in "Nostrums and Quackery."

C. W. MILLER, Waverly, Ia.: Second vice-president of the National League for Medical Freedom. Miller publishes a newspaper that carries advertisements of such nostrums as Winslow's Soothing Syrup, Doan's Kidney Pills, Lydia Pinkham's Vegetable Compound, Pierce's Favorite Prescription—all of which have been exposed by the American Medical Association. While in the Iowa legislature, Miller is said to have voted *against* (1) a pure food bill, (2) a bill that made the law relating to the sale of poison more rigid, (3) an act to regulate the sale of "patent medicines," (4) a bill to prevent the depositing of samples of "patent medicines" in private or public places—a bill that was formulated largely because of the deaths of children who had taken the sample packages left in yards and on porches. Miller is also alleged to have opposed bills that required the use of pure ingredients in ice-cream.

REYNOLD E. BLIGHT, Los Angeles: Chairman, Southern California Branch of the National League for Medical Freedom. Blight's name appears in connection with the "NaturAID Health Utilities Company," which does a mail-order business in curing "rupture, fallen womb, all deformities, malformation, floating kidney, large abdomen, constipation, all stomach troubles and all male and female weaknesses." Blight's name is also used by this concern in its attempts to sell its stock to the public.

1. The pamphlet will be sent on receipt of a 2-cent stamp.

CHARLES WENTWORTH LITTLEFIELD, M.D., Seattle, Wash.: Chairman of the Washington branch of the National League for Medical Freedom. Littlefield exploits the "Twelve Devitalized Tissue Builders," which are to be used "in curing all mental and nervous diseases." He advertises that "any organ or tissue of the body can be reconstructed and its functions reestablished by the use of Twelve Devitalized Tissue Builders. So also can any disease be cured by their use." He gives mail-order "treatments."

FREDERICK WALLACE ABBOTT, M.D. (F.S.Sc., Lond.), Taunton, Mass.: Member of the Advisory Board of the National League for Medical Freedom. The letters, "F.S.Sc., London," after a person's name, indicate that the individual is a "fellow" of the "Society of Science, Letters and Art" of London. This so-called society is a serio-comic fake which issues "fellowships," with an elaborate "diploma of merit" thrown in, at $5 apiece. The "diplomas" seem to be much sought after by "patent medicine" fakers. (See THE JOURNAL, May 29, 1909, and the book "Nostrums and Quackery," published by the American Medical Association, for further details concerning this fake "society.")

C. S. CARR, M.D., Columbus, O.: Member of the Advisory Board of the National League for Medical Freedom. Carr has been in the employ of the Peruna concern for years. He is editor of a pseudo-medical sheet in which some of the worst medical frauds in the country have been advertised. Many of these frauds have been exposed in THE JOURNAL. Carr does a mail-order medical business of his own, selling what he calls "tissue remedies." (See "The Great American Fraud," published by the American Medical Association, for further data on Peruna; also see THE JOURNAL, Dec. 9, 1911.)

GEORGE P. ENGLEHARD, Chicago: Member of the Advisory Board of the National League for Medical Freedom. Englehard publishes two journals which have long defended the "patent-medicine" interests and which have carried advertisements of some of the worst frauds in the nostrum business. Both of these publications have been exposed in "The Great American Fraud" and in THE JOURNAL.

CHARLES HUHN, Minneapolis: Member of the Advisory Board of the National League for Medical Freedom. Huhn was president of a cooperative "patent-medicine" concern, known as the American Druggists Syndicate, whose methods have been repeatedly exposed in THE JOURNAL.

A. F. STEPHENS, M.D., St. Louis: Member of the Advisory Board of the National League for Medical Freedom. Stephens was second vice-president of the Converse Chemical Company, a St. Louis nostrum concern which, a few years ago, tried to get advertising space in exchange for its treasury stock and offered to give away one share of stock with every bottle of its nostrum. This concern was exposed in THE JOURNAL, Jan. 12, 1907, p. 144.

Medical News

ILLINOIS

Personal.—Dr. Carl Bernhardi, Rock Island, was operated on at the Presbyterian Hospital, Chicago, December 11, and is reported to be making favorable progress.——Dr. Leon H. Tombaugh, Waukegan, who has been seriously ill, is reported to be improving.——Dr. Walter H. Watterson, Waukegan, treasurer of the Lake County Tuberculosis Institute, has resigned.

Auxiliary Antituberculosis Associations.—Unusual activity is being shown throughout the state in the organized fight against tuberculosis. In the last few days auxiliaries to the State Association for the Prevention of Tuberculosis have been formed at Rockford, Joliet, Elgin, East St. Louis, Pontiac and Alton.——The United Church Society of Chicago Heights has become an active auxiliary of the state association and the Women's Club of Mount Carmel is looking after the organization of Wabash County.

Chicago

The Fight Against Tuberculosis.—The Chicago sale of Red Cross seals, inaugurated by the Illinois State Association for the Prevention of Tuberculosis, is going on with vigor. Chicago is expected to dispose of 2,000,000 of these seals.

Personal.—Dr. William E. Quine, Chicago, has given $200,000 in memory of his wife, to be used in the erection of four schools for women in China.——Dr. Robert Sonnenschein was run down by an automobile, December 4, and seriously injured. Both legs were fractured, and he also received internal injuries.

Needs of Health Department.—Dr. George B. Young, health commissioner, Dr. Frank Billings and Chief Inspector Charles B. Ball spoke before the City Club, December 15, on "The Need of an Increased Appropriation for the Health Department." The object of the meeting was to make known the increasing demands on the city health department and the need for a greatly increased appropriation to meet these demands.

Chicago Will Continue to Supply Antitoxin.—The Secretary of the State Board of Health announces, under date of December 12, that the board will be unable to furnish further supplies of diphtheria antitoxin to the city of Chicago until July 1, 1912, as the appropriation of $8,000 for that purpose for the year is entirely exhausted. The city of Chicago, however, will continue to supply antitoxin as required and at the meeting of the City Council, December 18, an appropriation of $500, asked for by Dr. George B. Young, Commissioner of Health, was made to cover the present needs in this direction.

IOWA

Warns of Plague.—A bulletin issued by the secretary of the State Board of Health, December 4, urges the citizens of the state to assist in exterminating squirrels, rats and mice, which are known to be carriers of leprosy and bubonic plague. This bulletin is based on official notice from the secretary of the California State Board of Health, stating that the plague situation has not changed materially since last June.

Personal.—Dr. George H. Crane, Holstein, announces the opening of the new Holstein Hospital.——Dr. Henry H. Nichols has succeeded Dr. Norman E. Mighell as local surgeon of the Iowa Central Railroad at Marshalltown.——Drs. Margaret V. and G. Hardy Clark, Waterloo, sailed for Europe, December 12.——Dr. Willard G. Jeffries and family, Leon, started for Europe, December 5.——Dr. Aaron A. Noyes, Mason City, has retired from practice and will live with his daughter in Wauwatosa, Wis.——Assistant Superintendent Herbert V. Scarborough, Grand Junction, is in charge of the State Tuberculosis Sanatorium, Oakdale, taking the place of Superintendent Harry E. Kirschner, who has gone to California.——Dr. George P. Hanawalt, Des Moines, has moved from the house at Twelfth and Walnut streets, which he occupied for forty years, to his new home at Forty-First and Ingersoll streets, Des Moines.——Dr. Henry A. Leipziger and family, Burlington, have started for Europe.

MARYLAND

Hospital Opened.—The new hospital building connected with the National Training School for Boys, near Hyattsville, was formally opened, December 13.

Society Meetings.—Calvert County Medical Society held its annual meeting at Prince Frederick, December 12, and elected the following officers: president, Dr. Isaac N. King, Barstom; vice-president, Dr. Oliver D. Simmons; secretary-treasurer, Dr. John W. Leitch, Huntington, and delegate to the Medical and Chirurgical Faculty of Maryland, Dr. Philip Briscoe.——At the annual meeting of Dorchester County Medical Society held at Cambridge last week, a resolution was adopted urging on the governor-elect the importance of health work in the state. Dr. William H. Welch, Baltimore, president of the State Board of Health, and Dr. Hugh H. Young, Baltimore, president of the Medical and Chirurgical Faculty of Maryland and of the State Lunacy Commission, announced that it was the design to establish in every county of the state a medical laboratory with a trained pathologist who would act as health officer, make analyses of water and milk and assist the members of the local profession in making diagnoses. The governor-elect pledged his support to all forward movements.

Baltimore

Hospital Addition Opened.—The new addition to Mercy Hospital, under charge of the Sisters of Mercy and affiliated with the College of Physicians and Surgeons, was opened December 18.

Personal.—Dr. Howard A. Kelly is reported to be ill at his sanatorium, and typhoid fever is suspected.——Dr. Robert C. Keyser has been appointed coroner of the Eastern District, vice Dr. Thomas H. Sudler, deceased.

Member of Chemical Firm Dies.—Mr. Charles Emil Dohme, formerly vice-president of the firm of Sharp & Dohme, sometime president of the American Pharmaceutical Society and president of the Maryland College of Pharmacy, died at his home, December 7, from heart disease, aged 68.

MINNESOTA

Personal.—Dr. Charles H. Mayo, Rochester, was operated on for appendicitis, December 16, in New York City, and is progressing favorably toward recovery.——Dr. Archibald MacLaren, for twenty-six years acting assistant surgeon U. S. P. H. and M.-H. Service at St. Paul, has resigned.——Dr. Myron W. Smith has been elected president, Dr. Alvah W. Jones, vice-president, and Dr. John V. Anderson, secretary of the medical staff of Red Wing Hospital.——Dr. George F. Roberts, Minneapolis, a member of the Minnesota State Tuberculosis Sanatorium Commission, has resigned.——Dr. George H. Barksdale, Eveleth, has resigned from the staff of the Fabilo Hospital.

MISSOURI

Tag Day in St. Joseph.—As result of the third annual tag day in St. Joseph, $5,239.23 was realized for the benefit of local charities.

Personal.—Drs. John L. Short and Isaiah M. Owens, Rolla, have been appointed local surgeons to the Missouri, Arkansas and Gulf Railroad.——Drs. Harry W. Tull, Ethan E. Brunner, Richard F. Cook and Marshall W. Craton have leased a residence in Carrollton and have converted it into a hospital to be known as the Carroll County General Hospital.

State Antituberculosis Association.—A meeting of the board of directors of the Missouri Association for the Relief and Control of Tuberculosis was held at Jefferson City, November 13, and Dr. George Dock, St. Louis, was elected president; Dr. Walter McN. Miller, Columbia, secretary, and Mr. Saunders Norvell, St. Louis, treasurer, to fill vacancies. The president was authorized to appoint a special committee on finance, and it was agreed that the association undertake the organization of county societies with the ultimate hope that a visiting nurse, under the direction of local physicians, may be employed in each county.

St. Louis

Personal.—Dr. Charles E. Baur, superintendent of the City Hospital, has resigned to become superintendent of the Washington University Hospital, vice Dr. Wayne Smith, who has been appointed superintendent of the City Hospital.——Drs. Ernest H. Mueller and Robert Burns have been appointed assistant physicians at the Koch Hospital for Tuberculosis.——Dr. Horatio Nelson Spencer has been reelected governor of the Society of Colonial Wars in the State of Missouri.

City Medical Society Election.—At the annual meeting of the St. Louis Medical Society, November 23, the following officers were elected; president, Dr. J. Henry Amerland; secretary, Dr. Frederick C. E. Kuhlmann (reelected); councilors, Drs. Robert E. Schlueter, Frank Hinchey, Philip Hoffmann and Edmund A. Babler, and delegates to the state association, Drs. Joseph Grindon, Louis H. Behrens, Louis H. Hempelmann, Oscar H. Elbrecht, Robert E. Schlueter, Percy H. Schwahlen, Louis Rassieur and Thomas A. Hopkins. The society at its annual meeting, December 9, adopted resolutions presented by the public health and legislation committee upholding Health Commissioner Max C. Starkloff in his crusade against irregular medical practitioners.

NEBRASKA

Personal.—Dr. A. E. Bartoo, Arcadia, is about to locate in Brazil, South America.——Dr. Charles H. Newell, Omaha, underwent operation for appendicitis at Omaha General Hospital, November 22, and is reported to be doing well.——Dr. J. G. Neely, Diller, who was operated on a few weeks ago at the United Brethren Hospital, Beatrice, returned there November 14 for further treatment.——Dr. Emma E. Robbins, Hastings, has started for China. Dr. Robbins was tendered a farewell reception at Hastings by physicians of that city, November 7, and was presented with a gold signet ring.

Typhoid Fever Investigation.—Surgeon Lester L. Lumsden, U. S. P. H. and M.-H. Service, who was detailed to investigate into and report on the typhoid fever epidemics at the State Institute for the Feeble-Minded in Beatrice and in Lincoln, reports that contamination of water from impure pipes is probably the cause of the continuation of the epidemic in Beatrice. He suggests the removal of the old plumbing and the installation of new pipes. He also reports that he has made investigations in Lincoln, but without satisfactory results, as he was not called in until the epidemic had practically subsided.

NEW JERSEY

To Found New Hospital.—Mrs. Peter F. Collier, widow of the publisher of *Collier's Weekly*, has given $60,000 for the foundation of a new hospital to be built at Red Bank, N. J., and to be named the Peter Fenelon Collier Memorial Hospital.

Personal.—Dr. James A. Eaton, Arlington, has been elected secretary of the New Jersey State Sanitary Association.——Dr. Wm. L. Wilbur, Trenton, has succeeded George M. Wyckoff, resigned, as a member of the Hightstown Board of Education.

Must Provide Drinking-Cups.—The State Public Utilities Commission has issued an order compelling all roads in New Jersey to put drinking-cups in all trains at no expense to passengers, and at the same time of such a type as will meet the requirements of the law.

PENNSYLVANIA

Reading Hospital Annex.—The fireproof building, erected by the Reading Hospital as an annex, is completed and will soon be ready to receive patients.

Medical Licensure Bureau Organized.—On December 12, the new State Bureau of Medical Licensure organized by electing Dr. John M. Baldy, Philadelphia, president, and Nathan C. Schaeffer, Harrisburg, secretary. The new bureau will take over the duties of the State Medical Council and Examining Boards on January 1 and will meet in Harrisburg, January 22. Its members are determined that medical schools must obey the laws, that the standard of the profession may be elevated.

Probe Institutions Receiving State Aid.—The State Board of Education has started an investigation of all institutions in the state which receive appropriations from the commonwealth for the maintenance of educational departments or training schools. The institutions, which come in for their share of state aid, on the ground that they maintain educational departments, include the University of Pennsylvania, Temple University, The Glens Mills House of Refuge and nearly 100 homes, schools, asylums and orphanages. The purpose of the investigation is not to make any drastic or unfair changes in the management of educational institutions, but to hold in check the expenditure of state money.

Flood Relief Statement.—Statements of the expenditures of the relief work following the flood at Austin, on September 30, show that the state expended $23,952.82, and in addition paid to the Austin Relief Fund Commission the full amount of all subscriptions. The total contributed for the relief work through the Commissioner of Health, Dr. Samuel G. Dixon, amounted to $11,982.54, while $562.66, donated by newspapers, associations and individuals, passed through the hands of Governor Tener. The disbursements of Dr. Dixon are summarized as follows: laborers' wages, $13,371.17; foodstuffs, $4,677.81; expenses of employees of departments, $1,434.71; transportation, $431.02; drugs and disinfectants, $38.75; blankets and mattresses, $1,300.08; miscellaneous, $1,545.79

Philadelphia

To Do Away with Fraudulent Advertisements.—The Medico-Legal Society at its October meeting appointed a committee consisting of the following members: Drs. William D. Robinson and Samuel P. Gerhard, Benjamin H. Schwartz, Joseph Savidge and Samuel Scoville, chairman, to investigate and devise plans of doing away with fraudulent advertisements.

Gift to Dr. Neff.—On December 13, about one hundred friends of Dr. Joseph S. Neff, Director of Public Health and Charities, met and presented him with a gold chronometer watch. The following is inscribed on the time piece: "Presented to Dr. Joseph S. Neff by his fellow citizens in recognition of distinguished services as Director of the Department of Health and Charities of the City of Philadelphia, December 13, 1911."

Personal.—Mayor Blankenburg reappointed Dr. Joseph S. Neff, as head of the Department of Public Health and Charities, December 14, and the appointment received immediately the unanimous confirmation of Select Council.——Dr. Samuel W. Gadd was acquitted in the court of Oyer and Terminer, December 12, of responsibility for the death of a boy who was killed by Dr. Gadd's automobile.——Dr. Wilbur F. Litch was the guest of honor at a dinner at the Hotel Walton, December 16, given by the Philadelphia Dental and Stomatologic clubs.——Dr. Wilfred T. Grenfell, medical missionary in

Labrador, spoke at the University of Pennsylvania, December 17.——Dr. Thomas C. Stellwagen has been operated on recently for appendicitis.

To Prevent Abuse of Free Hospital.—At the meeting of the Philadelphia County Medical Society held at the College of Physicians, December 13, a recommendation that it should be made a misdemeanor under state law for any hospital or dispensary receiving state financial aid to treat as free patients those able to pay medical fees, was made by the committee appointed by the society to study the abuse of the free hospital dispensary services. This committee is composed of Drs. Howard S. Anders, chairman, G. Morton Illman, Edward J. G. Beardsley, Joseph D. Farrar and William D. Robinson. It was also recommended that a social service department should be established in connection with each institutional dispensary, to ascertain those patients, who are or are not able to pay; and, further, as in the Charity Organization Society, to follow up the cases. It was recommended that the county society delegates to the next state medical convention should be instructed to induce the committee on legislation of that body to take up the matter of formulating the law suggested, to prohibit or diminish the dispensary abuse.

TEXAS

Society Wants Hospital in Central Location.—By a vote of 44 to 26, the Dallas County Medical Society at its meeting December 2, indorsed a resolution asking the city commission to locate the new city hospital at some central point in the City. A committee of five was appointed from the Dallas Physicians' Lunch Club to confer with the Dallas City and County medical society's committee regarding the location of the hospital. This committee is composed of Drs. John O. McReynolds, Edward H. Carey, John S. Turner, Henry B. Dechard and Elbert Dunlap.

Physicians' Building Proposed.—Propositions have been made to the Dallas County Medical Society for a building to be erected in the city, which is to be devoted exclusively to offices for physicians who are members in good standing of the society.

Personal.—Dr. Joseph H. McCracken, Mineral Wells, has been elected president of the State Medical Association of Texas to succeed the late Dr. David R. Fly.——Dr. James R. Nichols, San Antonio, has been appointed physician to the State School for Deaf and Dumb, Greenville.——Dr. Christopher C. Nash, Mineral Wells, has been appointed assistant chief surgeon of the International and Great Northern Railroad.——Dr. Manton M. Carrick, Dallas, has been appointed chairman of the local committee for the sale of Christmas seals.——Dr. John D. Bedford, Amarillo, who has been ill in Dallas, is reported to be improving.——The life of Dr. James H. Bindley, San Antonio, was attempted December 2, a traveling representative of an insurance company being the assailant.

District Society Meetings.—The semiannual meeting of the Fifth District Medical Association was held in San Antonio, November 23, and the following officers were elected: Dr. William T. Dawe, Gonzales, president; Drs. Malone Duggan, San Antonio; Robert L. Fulcher, Blanco; C. Williamson, Seguin; William T. Dawe, Gonzales; David G. Wilborn, Runge; John W. Merritt, Harper; Ralph Redditt, Pearsoll; Benjamin R. Bradley, Hondo; G. S. Battey, Uvalde; Horace B. Ross, Del Rio, and William M. Clark, Floresville, vice-presidents; Dr. H. H. Ogilvie, San Antonio, secretary, and Dr. W. C. Williams, Staples, treasurer.——The Big Springs-El Paso District Medical Society met in Midland, November 22, and elected the following officers: Dr. John W. Overton, Sweet Water, president; Dr. Shirley C. Gage, Abilene, vice-president, and Dr. G. T. Hall, Big Springs, secretary-treasurer.

UTAH

County Society Meeting.—At the annual meeting of the Salt Lake County Medical Society, December 11, in Salt Lake City, the following officers were elected: president, Dr. Fred Stauffer; vice-president, Dr. Lashbrook B. Laker; secretary, Dr. Thomas A. Flood; treasurer, Dr. Robert R. Hampton, and censor, Dr. Robert C. Smedley.

Staff Reorganized.—Announcement is made of the reorganization of the staff of the Judge Morey Hospital, Salt Lake City. The staff is now made up as follows: chief of staff, Dr. Archibald A. Kerr and Drs. Ernest D. Hammond, William M. Thome, Alney N. Minear, Hans C. Jorgenson, Payson Henry S. Scott, Robert E. Steele, Clarence J. Albaugh, William D. Donoher, David H. Lewis, Eindred Viko, James C. Hanchett and Charles P. Harvieville Robinson.

FOREIGN

Sanitation in Tokio.—United States Consul-General Sammons, at Yokohama, reports that the city of Tokio will construct a modern sewerage system in that city modeled on the plans of systems of modern cities, probably following closely that of Berlin. This is to be done in preparation for the world exposition that is to be held in Tokio in commemoration of the fiftieth anniversary of the crowning of the Mikado. Tokio is one of the largest cities in the world and covers a great area. It is stated that approximately $17,000,000 to $20,000,000 will be spent on this improvement.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Dec. 9, 1911.

The National Insurance Bill

The national insurance bill has passed its third reading in the House of Commons by an enormous majority. The conservative or opposition party, while voting for an amendment expressing dissatisfaction with the shortening of discussion of the bill by the use of the guillotine, did not vote in the final division. They declined the responsibility of voting for, as well as against, the measure. "Willing to wound and yet afraid to strike" best describes their attitude. When the bill was introduced they vied with the supporters of the government in expressing approval of its principle—compulsory insurance of workmen against illness defrayed by contributions from three sources, the workman, the employer and the state. But, like every scheme which involves new taxation and affects vested interests, the bill is exceedingly unpopular with certain classes, notably the medical profession. As explained in previous letters to THE JOURNAL there are good reasons for believing that it may prove not only injurious to the profession, but also detrimental to the practice of medicine. Many employers object to a new tax which they maintain will render competition with other nations in the markets of the world more difficult. The insurance of domestic servants has aroused great opposition among both mistresses and servants, as it is maintained that during illness it is the rule for servants to be cared for by their employers and that, therefore, the measure is for them unnecessary. It is also true, however, that the poorer mistresses, such as lodging-house keepers, often do not and cannot provide for a servant in illness, and further, the bill provides many benefits, such as an allowance for permanent invalidity, which would practically never be granted by any mistress. The existence of these various currents of hostility encouraged the opposition to attack the details of the bill and aroused a fierce press campaign against it, characterized more by misrepresentation and vituperation than by argument. But the fact that the bill is popular with the working classes and is approved by most persons who are interested in "social reform," including even a section of the conservative party, has prevented the opposition from incurring the odium of voting against it, while at the same time professing great dissatisfaction with its details. But during its passage through the House of Commons, they offered no effective criticisms and confined themselves to attempts to show that it would be injurious to the working classes by imposing burdens and to the friendly societies by competing with them. This, of course, cannot be true, whatever its demerits, for the contributions per annum from the employers and the state amount to about $75,000,000, which is practically presented to the working classes.

Great surprise has been produced by the appointment of Mr. J. Smith Whitaker, medical secretary of the British Medical Association, as deputy-chairman of the insurance commissioners. The British Medical Association is very hostile to the bill, as it does not embody some of the most important of the six points (described in previous letters to THE JOURNAL), which it regards as essential, and has declared the bill in its present form to be unworkable. Mr. Smith Whitaker has since the beginning been the chief organizer and spokesman of the professional agitation against the bill and has an unrivaled knowledge of its details. He has accepted the appointment with the consent of the council of the British Medical Association. But as the association is so hostile to the bill, this has given rise to considerable discontent in the profession. One well-known consultant has gone so far as to describe, in the medical press, the appointment as a betrayal of the association. Probably the reason that the council agreed to the acceptance of the appointment was that they thought it was to the interests of the profession that such an important position

V. 5
1911

should be filled by some one intimately acquainted with the medical aspects of the problem and so representative of the profession's views. At present there are two camps in the association, as in the profession generally—those unreservedly hostile to the bill and in favor of declining to work it at all, and those who seek to work it by some compromise and hope to get those of the six points which are not inserted in the bill by arrangements with the local committees. It is the former who denounce the appointment. Before accepting it, Mr. Smith Whitaker placed himself unreservedly in the hands of the council of the association, asking that his personal interest should be placed entirely on one side, and that in coming to a judgment on the question the interests of the profession and of the association alone should weigh. Several branches of the association have passed resolutions condemning the appointment. Mr. Smith Whitaker is a physician, who, after practicing for ten years, showed such a talent for medical politics and the organizing of the profession, that he was, in 1902, appointed medical secretary of the British Medical Association, an appointment which was created for him. Previously he had been a business secretary.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Dec. 1, 1911.

Fees for an Operation Performed in a Hospital

Sometime ago the wife of a notary went to Mende, the capital of the department of Lozère, to consult Dr. Bardol, a member of the city hospital staff. Dr. Bardol, believing an operation necessary, advised the patient to enter the hospital, saying that he would be unable to undertake the operation with chances of success outside of the hospital. The patient did so and was operated on successfully by Drs. Bardol and Bessières, the latter also belonging to the staff of the establishment. Three bills were rendered to the patient: one for her hospital expenses and the two others for the fees of the physicians who had operated. The husband of the patient paid the first bill but refused the two others on the ground that his wife had entered the hospital on the advice of Dr. Bardol and that since Drs. Bardol and Bessières were members of the staff and received a salary from the hospital, their fees should be included in the bills from the hospital itself. The case being carried to the courts, the physicians won both in the lower courts and in the court of appeal, the judge deciding that Drs. Bardol and Bessières had acted not as members of the hospital staff but as practicing physicians in advising that the patient enter the hospital and that under these conditions they had a right to ask the patient fees which could not be put in the hospital account. Recognizing, moreover, that the refusal by the notary to pay the bill had been prejudicial to the interests of Drs. Bardol and Bessières, the courts awarded them each $10 (50 francs) damages.

The Suppression of the Illegal Practice of Medicine

During the last general assembly of the Syndicat des médecins de la Seine, Dr. Levassort, director of the syndicat service for the suppression of illegal practice of medicine, stated the various reasons which rendered his task more difficult: (1) the increasing adroitness of the irregulars in leading the *syndicat* into legal entanglements; (2) the slowness of judicial proceedings, one of which in an important case has lasted three years; (3) the judicial tendency to multiply expert evidence, the cost of which, sometimes very great, is not always reimbursed to the *syndicat*.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, Nov. 30, 1911.

Personal

In place of the deceased Professor Pavy of London, Professor Waldeyer has been chosen as president of the international committee for medical congresses.

Professor Finklenburg of Bonn has assumed the direction of the hydrotherapeutic institute as successor of Professor Strasburger.

Professor Menge of Heidelberg has, contrary to all expectations, declined at the last moment the call to Bonn as successor of Fritsch; it is reported that the long delay of the Prussian Kultusministerium (department of education) in replying led him to this decision.

Professor Umber, formerly director of the department of internal medicine in the municipal hospital at Altona, has been selected as the successor of the deceased Prof. E. Grawitz as director of the internal department of the municipal West End Hospital.

The president of the Dresden international hygiene exposition, Mr. Lingner, has received a new honor, having been given the honorary title of doctor by the medical faculty of Bern. While this distinction is not undeserved, yet it is partly explained by the fact that the well-known hygienist of the Bern university, Professor Kolle, has received the post of director of the serum laboratory founded by Lingner, and the conferring of the honor may be well attributed to these relations.

The Proposed Antiquackery Law Dropped

The committee appointed by the Reichstag for discussion of the bill for an antiquackery law has discontinued its labors, as there is no prospect of success resulting from their continuance. Without doubt, the result of the inquiry instituted by the government among the medical profession at the suggestion of the committee contributed to this result. The inquiry referred to the question, how the introduction of legislation for compulsory medical treatment of those diseases which were withdrawn from the activity of the quacks would be regarded. Naturally, all of the Aerztekammer (medical councils) decidedly disapproved. No regret will be felt at the committee discontinuing its labors. Aside from the fact that a passage of the law by the present Reichstag, whose term is now to be measured by weeks only, was not to be expected, we have from the unfortunate discussion in the committee no reason to desire a discussion of the law by the entire Reichstag. Whether the bill will be presented by the government to the next Reichstag may depend on the composition. The new elections will take place at the beginning of the next year.

Prize Claimed for Cancer Cure

The prize offered some time ago by a Roman legislator has been applied for by Dr. Schmidt, the Cologne investigator of cancer, as we learn from the newspapers. He bases his claim on forty patients whom he asserts that he has cured with his "antimeristem" serum. That Schmidt will be successful in his competition, if the granting of the prize is made dependent on the vote of a critical committee of experts, is not to be expected, for hitherto no case in which antimeristem treatment has been applied has stood the test of time. The cure of cancer still remains a task for the future.

Social Discrimination Against Army Medical Officers in Germany

Heretofore only the line and staff officers in the German army have had the right to appear at the general festivities at court. The continued efforts of the German *Sanitätsoffiziere*, the army medical corps, for equality in rank and position with the other officers have met with some success, as the Bavarian government has now conceded them *Hoffähigkeit*, that is, all general social court privileges.

VIENNA LETTER

(From Our Regular Correspondent)

VIENNA, Dec. 6, 1911.

New Universities for Hungary

The minister of education has laid before the Hungarian Parliament a bill which has been received with great patriotic enthusiasm, as it stipulates the erection of two new universities in Hungary, in the cities of Pressburg and Debreczin. Only the Pressburg institution will include a medical school, the conditions for such a school being very favorable just there. That city has a large hospital (the largest of all provincial hospitals), a school for midwives and a children's hospital. Very little expenditure will be needed, therefore, for theoretical teaching and for the completion and enlargement of the already existing institutions. The other two medical schools in Hungary (one in Budapest and one in Koloszvar) are very well attended, and a third university will be none too many, for the northern and western parts of the country are dominated in this respect by Vienna. These districts will in the future find their intellectual center in Pressburg, and this will, no doubt, bring forth a closer connection with Hungarian scientists. Pasteur said that "science is international; the scientists act in patriotic manner by promoting knowl-

edge;" it will be only natural that Vienna's old university will have some influence on the new Hungarian university. It would be irrational patriotism on the Hungarian side to object to such an influence, for the expenditure involved in the adaptation of the old buildings and erection of the new a sum of $400,000 (2,000,000 kronen) will be granted by the state annually during the next ten years.

Thirty Years of the Vienna "First Aid" (Rettungsgesellschaft)

Thirty years ago a fierce fire broke out in the Vienna City Theater and 800 lives were lost, owing to the complete absence of any organization for first aid and to the irresponsibility of the officials. Under the fearful impression of this overwhelming disaster, a non-medical man, Count Mundy, quickly called into life a first-aid ambulance organization (freiwillige Rettungsgesellschaft) with a view to rendering help in an organized and methodical way, in public disasters, accidents and the like. During these three decades this organization has become an indispensable factor in public welfare; it has served as a model for numerous similar organizations in other cities, and its daily calls number over a hundred. Occupation at this Rettungsgesellschaft is considered a special privilege for a physician, and the organization is highly esteemed by all medical and charitable bodies, as well as by the public authorities. It has been placed on such a financial footing by generous donations and by grateful persons that it is self-supporting and able to erect two branch stations in the outlying districts of Vienna. The medical profession is justly proud of this eminently humanitarian organization, to which all congratulations are due.

Marriages

GRACE MABEL MORRIS, M.D., Richfield Springs, N. Y., and Major Robert Ashton of London, England, in New York City, November 16.

GEORGE EMMETT KNAPPENBERGER, M.D., Kingman, Kan., to Miss Gertrude Johnson of Norton, Kan., December 2.

RICHARD WALKER BOLLING, M.D., New York City, to Miss Florence Easton of La Crosse, Wis., December 7.

LANG ALLEN MITCHELL, M.D., Frederick, Okla., to Miss Cornelia O. Boyd of Nashville, Tenn., October 18.

HERBERT L. KELLY, M.D., U. S. Navy, to Miss Emily Simons of St. Helena, Cal., December 16.

DUDLEY WILLIAMS, M.D., Baltimore, to Mrs. Florence Levering Jenkins, at Baltimore, December 6.

JOSEPH T. MARTIN, M.D., to Miss Margareta E. Burke, both of Oklahoma City, Okla., November 14.

J. SAMUEL BROWN, M.D., to Miss Lura Lee Bond, both of Ghent, Ky., at Louisville, October 24.

JOHN A. BROADFIELD, M.D., to Miss Edith Mitchell, both of Philadelphia, November 30.

ABE MARK NEWTON, M.D., Chicago, to Miss Parsons of Pontiac, Ill., November 19.

ERIC J. DANEK, M.D., to Miss Pauline Smith, both of Chicago, December 20.

CHARLES MOORE, M.D., Advance, Mo., to Miss Emma Prather, November 30.

Deaths

John Porter Davidson, M.D. University of Virginia, Charlottesville, 1893; a member of the American Medical Association; a member of the staff of the Memorial Hospital, Richmond; professor of ophthalmology and otology in the Medical College of Virginia, Richmond, since 1898; widely known throughout the South as a specialist in diseases of the eye and ear; died at his home in Richmond, November 28, from heart disease, aged 42. The faculty of the Medical College of Virginia and the Memorial Hospital acted as honorary pallbearers at his funeral.

Maurice P. Hunt, M.D. Cleveland University of Medicine and Surgery, 1879; surgeon to the Sixth Avenue Private Hospital, Columbus; formerly an instructor in the University of Michigan; died at the home of his brother in Santa Monica, Cal., November 20, from cerebral hemorrhage, aged 58.

Judd Goodrich, M.D. University of Minnesota, Minneapolis, 1895; a member of the Minnesota State Medical Association; surgeon to the St. Paul Free dispensary; assistant in surgery on the staff of St. Luke's Hospital, St. Paul, and a member of the genito-urinary staff of the City and County Hospital; died at his home in St. Paul, November 30, from heart disease, aged 42.

Orville Evans Evans, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1878; a member of the American Medical Association and a practitioner of Gowrie, Ia., since 1872; a veteran of the Civil War; died at his home, November 21, from cerebral hemorrhage, aged 65.

Robert Denison Dashiell, M.D. Hahnemann Medical College, Philadelphia, 1875; a practitioner of Fairmount, Md., and later connected with the *Marylander* and *Herald*, Princess Anne; died in the Peninsula General Hospital, Salisbury, Md., November 10, aged 61.

Joseph W. Robb, M.D. University of Louisville, Ky., 1862; for twenty years a practitioner of Russell, Kan., but since 1904 a resident of Shelbyville, Ky.; died at the King's Daughters' Hospital in that city, October 19, from pneumonia, aged 74.

Pierre George Dausch, M.D. University of Maryland, Baltimore, 1868; formerly a member of the American Medical Association; died suddenly at his home in Baltimore, November 26, from cerebral hemorrhage, aged 63.

William A. Burdick, M.D. Cincinnati College of Medicine and Surgery, 1885; an honorary member of the Kalamazoo Academy of Medicine; died at his home in Galesburg, November 15, from chronic nephritis, aged 78.

Frederick Clinton Graves, M.D. New York Homeopathic Medical College, 1899; surgeon of the Fire Department of New Bedford, Mass.; died at his home in that city, November 22, from pneumonia, aged 37.

James Andrew Leet, M.D. Dartmouth Medical School, Hanover, N. H., 1884; of Enfield; a member of the New Hampshire Medical Society; died in the Hanover Hospital, November 12, from typhoid fever, aged 56.

Morris M. Hale, M.D. University of Michigan, Ann Arbor, 1864; Jefferson Medical College, 1870; one of the oldest practitioners of Hot Springs, Ark.; died at his home, November 18, from acute gastritis, aged 74.

Elmer Lewis Fletcher, M.D. Albany (N. Y.) Medical College, 1887; a specialist on diseases of the eye, ear, nose and throat, of Eugene, Ore.; died at his home, November 10, from heart disease, aged 49.

Leland T. Bohannon, M.D. Louisville Medical College, 1870; physician of the Buckner Orphans' Home, Dallas, Tex.; died at his home in Orphans Home Station, November 27, aged 63.

Addison McNeill Grizzard, M.D. Vanderbilt University, Nashville, 1892; of Huntingdon, Tenn.; died in Altura, Tex., November 8, from tuberculosis, aged 42.

James Turner Clarke, M.D. Jefferson Medical College, 1857; a member of the Medical Society of Virginia; died at his home in Mount Solon, Va., December 1, aged 91.

Oscar Albert Bemis (license, Massachusetts); a member of the board of health of Whitman; died suddenly from heart disease, November 22, aged 66.

William Wallace Evans, M.D. Michigan College of Medicine and Surgery, Detroit, 1898; died at his home in Dayton, O., November 20, aged 61.

Zachariah D. Emerson, M.D. Kentucky School of Medicine, Louisville, 1880; died at his home in Van Alstyne, Tex., November 28, aged 64.

Charles John Creighton, M.D. Rush Medical College, 1879; formerly of Chicago; died at his home in Redlands, Cal., November 27, aged 69.

John Hendee Breeden, a practitioner of Fulton, Ill., since 1856; died at his home in Ipava, October 25, from arteriosclerosis, aged 76.

Jacob Hull, M.D. Bennett Medical College, Chicago, 1876; died at his home in Hicksville, O., November 14, from heart disease, aged 68.

John R. Dorroh, M.D. Miami Medical College, Cincinnati, 1884; died at his home in Angels Camp, Cal., November 9, aged 50.

Isaac N. Hill, a practitioner of Missouri for about seventy years; died at his home in Harwood, October 28, aged 92.

Philo Henry Clark, M.D. University of Buffalo, N. Y., 1862; died at his home in Ashland, O., November 28, aged 91.

V. 5
1911

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

GOOD WORK IN NORTH DAKOTA

Some Widely Advertised Nostrums Exposed by the State Chemists

We have at different times commended the work of Prof. E. F. Ladd, Food and Drug Commissioner of North Dakota. The *Bulletin* issued by the North Dakota Agriculture Experiment Station is looked forward to each month because it always contains information of definite and positive value to the public—and, incidentally, to the medical profession. North Dakota is one of the few states that enforce their food and drug laws fearlessly. There is nothing "mealy-mouthed" about the bulletins regarding infractions of the food and drug law; no glittering or innocuous generalities but statements of fact dealt straight from the shoulder with the one object in view of protecting the public. The November *Bulletin*, besides containing the names of a number of food products that have been examined by the state authorities, also has some analyses of widely advertised nostrums. Here are some of them:

TORIS COMPOUND

This nostrum, put out by the Globe Medical Company, Chicago, comes under the "prescription fake" class. That is to say, it is advertised as one of the ingredients in an apparently bona-fide prescription that is recommended for the treatment of rheumatism. The prescription calls for 1 ounce of compound sarsaparilla, ½ ounce of whiskey and 1 ounce of Toris Compound. The results of an analysis of the nostrum were given as follows:

Sugar	74.1 per cent.
Sodium salicylate	15.8 per cent.
Saltpeter [potassium nitrate]	10.0 per cent.

This means that the individual who pays 50 cents for an ounce of Toris Compound gets ⅛ of an ounce of sodium salicylate, ⅛ of an ounce of saltpeter and ¾ of an ounce of sugar—a mixture which would cost about 1 cent.

DR. GREENE'S IMPROVED COMPOUND OF SARSAPARILLA

This nostrum is one of the cure-all type and is put out by the F. R. Greene Medicine Company, Chicago. It is "guaranteed to cure" about forty diseases and is said to be a purely vegetable product. As a result of an examination of this nostrum, the analyst reported:

> "This preparation has more of the characteristics of a weak aqueous infusion of gentian than we should expect to find in a concentrated preparation of sarsaparilla. The total extractive is very low and about 37 per cent. of this is in the form of dextrose."

In commenting on the findings of the chemists, Prof. Ladd characterized this nostrum as follows: "The writer cannot do other than class the sample which was examined in this laboratory as strictly of the fake class, the sale of which product is illegal in North Dakota. The claims made for this product are absurd, misleading and false. It does not contain the products which are purported to be present in sufficient quantity so that they may even be detected. Instead of containing 1/6400 per cent. of formaldehyd, it contains 0.36 per cent., and instead of containing approximately 15 per cent. of alcohol it contains but a small fraction of 1 per cent.; and the information conveyed with this product bears all the earmarks of a fake preparation."

PAPE'S COLD COMPOUND

This nostrum is extensively advertised by the "reading notice" method. That is to say, the advertisements are not set in display but are run as news matter. The assertion is made that the compound is the result of three years' research which cost $50,000 and much stress is laid on the fact that it contains no quinin. It is called a "harmless" compound and the statement is made that "there is no other medicine made anywhere else in the world which will cure your cold or end grippe misery as promptly" as will Pape's Cold Compound. This wonderful $50,000, "harmless" mixture was analyzed and found to contain, as the three essential constituents, acetanilid, phenolphthalein (a purgative) and ordinary sugar. According to the state chemists the composition of each tablet of Pape's Cold Compound is essentially as follows:

Acetanilid	1.6 grs.
Phenolphthalein	1.8 grs.
Sugar	8.0 grs.

From this we see that the claim that it is harmless and the further claim that it will cure a cold are both fraudulent.

CALOCIDE COMPOUND

This preparation is made by the Medical Formula Company, Chicago. Calocide is advertised as the "quickest and surest cure known for corns, callouses, bunions, frost bites, sweaty and aching feet" and is designated as "a remarkable home treatment for all foot troubles." Analyzed by the state chemists, it was found to be a first cousin to a similar nostrum—Tiz—exposed in THE JOURNAL, December 2. The results of the examination were as follows:

Borax	13.5 per cent.
Salt	24.0 per cent.
Alum	38.0 per cent.
Tannic acid	0.1 per cent.

EILERT'S EXTRACT OF TAR AND WILD CHERRY

This nostrum, which contains 15 per cent. alcohol, is put out by the Emmert Proprietary Company, Chicago, as a "sure cure for consumption, asthma," etc. Some other assertions that appeared on the carton are:

> "Cures consumption, catarrh, bronchitis, asthma, coughs, colds, spitting of blood, pains in breast and side."
>
> "Relief will be found in Eilert's Extract of Tar and Wild Cherry even in advanced stages of this disease [consumption] and a positive cure is almost certain in the incipient stage."

While these lying assertions are not forbidden under the federal Food and Drugs Act (thanks to the Supreme Court's decision on the subject), they are forbidden under the North Dakota Drug Law, which declares a medicine misbranded "if it bear any design which shall deceive or tend to deceive."

Analysis indicated that this preparation was essentially a syrup containing extract of tar and wild cherry and glycyrrhiza (licorice) with slight amounts of potassium, sodium and iron as chlorids, sulphates and phosphates. To sell a very ordinary cough mixture as a cure for one of the most deadly diseases known is a piece of commercial heartlessness as cruel as it is mendacious.

RED RAVEN

This widely advertised aperient water put out by the Red Raven corporation of Harnerville, Pa., is recommended for "chronic constipation, dyspepsia, liver and stomach disorders, congestion, obesity and gall-stones." Analysis of the water disclosed the following solids in each 100 c.c.:

Sodium chlorid (common salt)	.0685 grams
Magnesium sulphate (Epsom salts)	.1004 grams
Sodium phosphate	3.5806 grams

The abuse of saline cathartics is so wide-spread and fraught with such serious results that the public cannot be warned too often on this point. It is perfectly evident from the analyses of this and various other so-called aperient waters that they possess no other properties than those common to saline purgatives.

Correspondence

Vasotonin and Dr. Fellner Again

To the Editor:—Being constantly annoyed by letters and requests to make the injections of vasotonin in cases of arteriosclerosis, as a result of the article in the New York *Times*, I ask your kind help to set me right in the eyes of the profession. The article which appeared in the Sunday edition of the New York *Times*, November 26, was entitled "Can Dreaded Hardening of Arteries now be Cured?" It referred to Dr. Bruno Fellner, Jr., of Franzensbad, Austria, who believes he has found an effective remedy against arteriosclerosis.

At the end of this article I find my name without any logical connection whatsoever, the writer of the article having copied a part of my paper on this subject.

In justice to myself I beg to state that I never heard of Dr. Fellner or his work before, and that my permission to copy a part of my article was never asked.

WILLY MEYER, New York.

[COMMENT.—This matter was referred to in THE JOURNAL, Dec. 9, 1911, page 1936.—EDITOR.]

The Hospital Service in the American Revolution

To the Editor:—In searching for a revolutionary fact I recently came across the following order of June 4, 1777, by Dr. W. Shippen, Jr., director general of the American Hospitals, and John Cochran, physician and surgeon general of army in the middle department, making certain historic appointments:

The liberal provision made by Congress in the new medicinal arrangements, joined with a humane desire to prevent the repetition of the distresses which afflicted the brave American soldiers in the last campaign, have drawn men of the first abilities into the field, to watch over the health and preserve the lives of the soldiers, many of them from very (exhaustive?) and profitable practice, and every species of domestic happiness. Dr. William Brown of Virginia, Dr. James Clark of Maryland and Dr. Thomas Bond, jun., of Philadelphia, are appointed Assistant Directors General. Dr. Walter Jones of Virginia and Dr. Benjamin Rush of Philadelphia, Physician and Surgeon generals of the hospitals of the middle department. Under these none (?) but gentlemen of the best education, and well qualified, are employed as senior physicians, surgeons, &c. The eastern and northern departments are filled with gentlemen of the first characters in these countries; and the public may depend on it, that the greatest exertions of skill and industry shall be constantly made, and no cost spared, to make the sick and wounded soldiery comfortable and happy. As a consequence of the above liberal arrangement of the Honorable Congress, we do, with great pleasure, and equal truth, assure the public (notwithstanding the many false and wicked reports propagated by the enemies of American liberty, and only calculated to retard the recruiting service) that all the military hospitals of the United States are in excellent order, and that the army enjoy a degree of health seldom to be seen or read of.

W. SHIPPEN, Jun., Director General of the American Hospitals.
JOHN COCHRAN, Physician and Surgeon General of Army in the Middle Department.
Head Quarters, Middle Breck, June 4, 1777.

** It is requested that the above may be published in all the newspapers on the continent.

—*Connecticut Courant and Weekly and Hartford Intelligencer*, July 7, 1777.

Believing that the above may be of interest to some of the profession, I suggest that THE JOURNAL publish it and make it accessible.

G. M. BRUMBAUGH, Washington, D. C.

Active Sympathy with the Propaganda

To the Editor:—Your article on "The Mote and the Beam" is to the point. I wrote to two medical journals published in New York telling them to strike my name from their list of subscribers because they carried a Postum Cereal advertisement. Just as soon as a medical journal has a falling off of its paid subscribers, it will then "take notice and be good." Religious journals are dreadfully hungry for the "thirty pieces of silver." Their pseudomedical advertisements have the brazen face of the prostitute. Unfortunately, a number of these gullible readers accept every advertisement that appears in a religious journal as if it had the seal of Heaven stamped thereon. A Chicago gambler made the remark that a "sucker was born every minute." From a close range study of some doctors, during a practice of seventeen years, I am forced to believe that the Chicago gambler had the medical profession in mind when he coined his famous epigram.

E. T. MILLIGAN, M.D., Detroit.

[COMMENT.—If many physicians show the same active sympathy with the propaganda work as that shown by our correspondent, the proprietary evil will receive the severest blow yet dealt. Without appearing hypercritical, we feel, nevertheless, that Dr. Milligan would have done more for the cause of scientific medicine had he told the publishers of the two journals to whom he wrote that he was cancelling his subscriptions because of the vicious medical advertisements that these journals carry—if this was his reason, as we believe it was. The readers of THE JOURNAL need not be told that it holds no brief for the Postum Cereal concern. It must be confessed, however, that the Postum Cereal advertisements do not compare in objectionableness with the advertisements of many of the nostrums carried by the two journals to which Dr. Milligan wrote. Advertisements of humbugs such as Antikamnia, Papine, Ammonal, Phenalgin, etc., are infinitely more dangerous to the public and more harmful to scientific medicine than all of the breakfast foods or coffee substitute advertisements that were ever published. Yet we find all of them and many more exploited in the pages of the two journals for which our correspondent no longer subscribes—two journals, by the way, that rank high so far as their reading pages are concerned, and journals that are supported by the leading members of the profession.—EDITOR.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ANIMAL LIFE IN THE HUMAN STOMACH

To the Editor:—Can you refer me to any authentic cases in which lizards or other form of animals foreign to the human stomach or intestines, have ever been found? Recently a female patient came under my observation with symptoms of some worm or other form of animal life in the stomach, which, she says, chokes her at times. Observation of stools does not reveal any signs of tapeworm. Treatment for tapeworm gave no results.

A. F. STOTTS, Galesburg, Ill.

ANSWER.—Roundworms have been vomited, but how long they have remained in the stomach is uncertain. So far as we know, there is no reliable evidence that the human stomach has harbored any animals higher in the zoölogic scale than the worm. The conditions are such as to render this impossible or at least highly improbable. Patients come to believe that they harbor such animals because they experience sensations in the stomach, which are interpreted to mean that something is moving there and these sensations may give rise to a fixed insane idea that an animal is present in the stomach.

TEST FOR ACETONE IN URINE

To the Editor:—Kindly give a simple and accurate test for acetone in urine. All I find in text-books are complicated and I am not sure of their preciseness. F. B. M.

ANSWER.—The tests given in the ordinary text-books can hardly be regarded as complicated, although some of them are less reliable than others. One of the simplest and the most reliable is that of Gunning. Gunning's test may be applied to the native urine but is more reliable if used with the distillate of the urine. It is made by adding to the urine or distillate a small amount of Lugol's solution and then treating with ammonia until a black precipitate of nitrogen iodid is produced. This disappears on standing and in the presence of acetone is replaced by iodoform, which may be recognized by its odor and by its characteristic crystals.

RADIUM TEAS

To the Editor:—The newspapers are giving space to an account received by cablegram from Paris of what they call "radium teas"; that is, exposure to radium emanations for a number of hours, during which time the patients play cards or read and take tea. Is this pure guff or is it an actual scientific process? C. H.

ANSWER.—This purports to be a scientific procedure. A short account of it will be found in this issue of THE JOURNAL, page 2111, abstract 50.

V. 5
1911

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF POST-GRADUATE WORK, CONTRACT PRACTICE, LEGISLATION, MEDICAL DEFENSE, AND OTHER MEDICOLEGAL AND ECONOMIC QUESTIONS OF INTEREST TO PHYSICIANS

A HOMEOPATHIC VIEW OF THE LEAGUE FOR MEDICAL FREEDOM

One of the leading homeopathic physicians of Boston recently received a letter from a professional friend, also a homeopathic physician, asking him to join the League for Medical Freedom. In his reply, given below, he states his reason for declining this opportunity. He also discusses the proposed national department of health in a way that does credit to his breadth of view and his freedom from sectarian prejudices. His position is that of every broad-minded scientific physician and his statement of his position will, we hope, lead many of his professional associates to consider the question of national health legislation without bias, and to ask themselves whether they are willing to stand before the public as opposed, for purely sectarian reasons, to a needed reform.

BOSTON, Nov. 27, 1911

"*My Dear Doctor:*—Your letter of the first has remained unanswered in order that I might have ample time to consider your request and also to inform myself as thoroughly as possible concerning the 'League for Medical Freedom.' I read Flower's article when it first appeared in the *Twentieth Century* of June, 1910, and I have read much that he has written since. I have read pretty much everything *Collier's* has had to say about the league, and what THE JOURNAL of the American Medical Association has said, and, as a climax read every word of Senator Works' long speech before Congress on the Owen bill. Hence you cannot accuse me of not attempting to inform myself whereof I speak.

"My conclusion is that the more I learn of the 'League for Medical Freedom' the less use I have for it, and the deeper is my conviction that it is at bottom a thousand times more selfish and self-seeking than the American Medical Association ever dreamed of being. I believe that the instigators and framers of the league care infinitely less for the welfare of the 'dear public' and its physical protection than any body or set of men who ever banded themselves together. I am of the opinion that the league was conceived in selfishness and born for that single purpose. It goes without saying that there are many excellent men like yourself who are members of the league, but all such have been drawn into its meshes by the sophistries and false pretenses put forth to catch the unwary. They need you good people for just one purpose, namely, to get their chestnuts out of the fire, which chestnuts —'patent medicines,' impure foods and drugs, fake methods of practice, and many other money-making humbugs—are in danger of being destroyed.

"If the Owen bill threatened one-tenth the danger to the public welfare which the real animus of the originators of the league threatened then I would say 'fight the bill to the finish.' Just consider a moment, my dear doctor, what the league stands for as represented in Senator Works' speech. It seeks to annul or belittle all the great discoveries made in medicine during the last fifty years. It practically wipes out the germ theory of disease. It would abolish all public health boards. It would not insist on quarantine of infectious diseases. It would terminate at once all public school medical inspection. It would prohibit compulsory vaccination. It scoffs at typhoid protection in the army. It would only too gladly wipe out all restrictions on pure foods, drugs and medicines. It would annihilate animal experimentation *in toto*. To be sure, Senator Works does not say all this in so many words, but it is there and easily read between the lines.

"I fail to see how any self-respecting physician can endorse that speech when the speaker heaps on the physicians that invidious opprobrium of advocating public school inspection for the sole purpose of so frightening the parents of the school children that those parents will rush madly to the doctors to have the children cured of disease, which, according to Senator Works, they probably did not have, and thus line the doctors' pockets with ill-gotten gains. Will any honest physician take that insult quietly? Yet he places the entire profession in just that sinister light.

"Is there a public school teacher in the land who has watched the effect of medical inspection in the schools who will not endorse it most enthusiastically because of the good rendered the afflicted children. It seems to me, doctor, if we of the homeopathic school are so afraid that the dominant school will legislate us out of existence that we must call to our aid the medical quacks, the 'Christian Scientists,' the poison food squad and all the other medical sore-heads, then I think it is better that we die a respectable death and have a decent burial. For my part I would rather be licked fighting honorably with honest comrades than win by the aid of the Hessians. This 'League for Medical Freedom' is not our fight; it is the sore-heads' fight. We belong to an honorable, self-respecting branch of the medical profession which has never, thus far, sullied its plumage by resorting to questionable methods of warfare. We have won our way into the hearts of the people, and gained the respect of the dominant school by our endeavors to do honest, scientific, progressive work. We have prided ourselves that we have always adopted and tried to the uttermost every new measure for the cure of disease and alleviation of suffering which medical science has brought forward. Never have we taken a backward step.

WHO WOULDN'T RATHER BE A HORSE IN LOS ANGELES

NEWS ITEM.—Individual drinking "cups" for horses will be a reality if a recommendation by the Los Angeles board of veterinary surgeons is carried out. Watering troughs are breeding places for glanders germs, say the veterinarians. The report urges each driver to provide himself with a bucket, from which his horses, and no others, may drink.

THAN A CHILD IN SOME OF OUR CITIES?

"'All that pertains to the great field of medical learning is ours by tradition, by inheritance, by right.' Are we going to repudiate that splendid record and stultify ourselves by joining forces with the deadly enemy of medical progress simply because a few in our ranks are seized with an attack of hysteria and yell, 'We will be legislated out of existence'?

"If there is not enough truth in homeopathy and stuff enough in her followers to stand such legislation as proposed in the Owen bill then she deserves just such an ignominious death. But she won't die that way. There is a fundamental truth in that old law of Hahnemann which you cannot choke, hang, stick, strangle, electrocute or kick to death, and when all those methods have been tried, it will, like the cat, come home again very much alive. Some day our brothers of the dominant school will set to work and prove the truth of that law by laboratory tests (and the shame will be on us if we do not do it first); then will that old, battered, but much-alive truth be set on a pinnacle of perpetual peace.

"The fact is, we need a national bureau of public health just as much as we need state boards of health. It may not be in just the form outlined in the Owen bill, but such a department is necessary to the physical welfare of the American people, and, being such, it will be created. It is simply in the line of progress, and when an individual or a body of individuals throw themselves in the pathway of the chariot of progress they are likely to be rendered broader and longer, but being much flattened they will not be altogether useful.

"DEWITT G. WILCOX."

POSTGRADUATE COURSE FOR COUNTY SOCIETIES

Fourth Month—Fourth Weekly Meeting

PLEURISY

VARIETIES

ACUTE AND CHRONIC: Acute plastic, sero-fibrinous, purulent, tuberculous, hemorrhagic. Chronic with effusion, chronic adhesive.

PATHOLOGY

ACUTE PLASTIC: Extent of lesion, surface, blood-vessels, exudate, adhesions, terminations.

SERO-FIBRINOUS: Extent of involvement, fibrinous exudate, character and amount, serous exudate, physical, chemical and microscopic characters, location of exudate, changes in pleuræ.

Coincident pathology, mediastinum, lungs, heart, abdominal viscera.

PURULENT: Character of exudate, pleuræ, microscopic and gross changes.

HEMORRHAGIC: Physical and microscopic character of exudate, changes in pleuræ.

SYMPTOMS

General symptoms. Physical signs. Grocco's paravertebral triangle.[1]

TREATMENT

Medicinal treatment. Indications for surgical treatment.[2]

EMPHYSEMA [3]

COMPENSATORY EMPHYSEMA: Usual causes. Manner of its production.

HYPERTROPHIC EMPHYSEMA: Etiology. Theories as to causation. Bearing of heredity.

PATHOLOGIC ANATOMY: Changes in air cells, in bronchi, in chest walls.

SYMPTOMS: Characteristic symptoms. Physical signs.

GANGRENE OF LUNG

ETIOLOGY: Most prominent causative factors. Pathologic anatomy. Mechanism of production. Pathologic changes.

Symptoms. General symptoms. Diagnostic Symptoms. Course and termination.

ABSCESS OF LUNG

ETIOLOGY: Local conditions. Manner of production of pyemia.

1. Progressive Med., September, 1905, p. 45, and September, 1909, p. 61. Thayer and Fabyan: Am. Jour. Med. Sci., January, 1907.
2. THE JOURNAL A. M. A., Jan. 5, 1907.
3. Progressive Med., September, 1908, p. 67.

Monthly Meeting

Prognosis in Lobar Pneumonia.
Treatment of Bronchopneumonia.
Diagnosis and Treatment of Pleurisy with Effusion.
Clinical Significance of Hemoptysis.

The Public Service

Medical Department, U. S. Army

Changes during the week ended Dec. 16, 1911.

McDonald, Charles E., M.R.C., granted leave of absence for two months and thirteen days, about March 1, 1912.

Dean, Elmer A., major, leave of absence extended twenty days.

Halliday, C. H., M.R.C., relieved from duty at Fort Fremont, S. C., and ordered to Fort Brady, Mich., for duty.

Etter, Harry B., lieut., granted leave of absence for one month and sixteen days.

Wing, F. F., dental surgeon, left from temporary duty at Fort Mackenzie, Wyo., on twenty-five days' leave of absence.

McCormack, C. C., lieut., granted leave of absence for one month and seven days.

Saurman, John S., M.R.C., ordered to active duty and assigned to station at Fort Monroe, Va.

Ingalls, R. E., dental surgeon, reported for temporary duty at Fort William H. Harrison, Mont.

Manly, C. J., major, ordered to Walter Reed General Hospital, Takoma Park, D. C., for observation and treatment.

Cutliffe, William O., M.R.C., ordered to Fort Lawton, Wash., for temporary duty.

McAlister, John A., Jr., dental surgeon, left Fort Leavenworth, Kan., en route to take station at Jefferson Barracks, Mo.

The following named officers of the Medical Corps are detailed to enter the Army Field Service and Correspondence School for Medical Officers at Fort Leavenworth, Kan., April 1, 1912: Lewis, William F., major; Clayton, Jere B., major; Dean, Elmer A., major; Bispham, William N., major; Ekwurzel, George M., major; Patterson, Robert H., major; Bevans, James L., captain; Thomason, Henry D., captain.

Medical Corps, U. S. Navy

No changes during the week ended Dec. 2, 1911.

Changes for the week ended Dec. 9, 1911.

McCullough, F. E., surgeon, detached from the *Minnesota* and ordered to the *Delaware*.

Carpenter, D. N., surgeon, orders of November 8 revoked.

Snyder, J. J., surgeon, orders of November 23 revoked.

Seaman, W., surgeon, orders of November 23 modified; ordered to the *Minnesota*.

Valz, E. V., P. A. surgeon, detached from duty at naval prison, Portsmouth, N. H., and ordered to duty at naval hospital, Mare Island, Cal.

Barker, Z. A., A. A. surgeon, ordered to duty at marine recruiting station, Detroit.

U. S. Public Health and Marine-Hospital Service

Changes for the fourteen days ended Dec. 13, 1911.

Carter, Henry R., surgeon, granted two months' leave of absence on account of sickness, from Nov. 14, 1911.

Neugeger, J. A., surgeon, granted four months' leave of absence from Dec. 1, 1911, on account of sickness.

Oakley, J. H., surgeon, granted one month's leave of absence from Dec. 15, 1911.

Grubbs, S. B., P. A. surgeon, detailed to New York quarantine station for a period of five days for study of quarantine methods in connection with vessels from cholera-infected districts.

Von Ezdorf, R. H., P. A. surgeon, detailed to represent the Service at the meeting of the Southern Medical Association to be held at Hattiesburg, Miss., Nov. 14-16, 1911.

Anderson, J. F., P. A. surgeon, directed to proceed to New York for the purpose of investigating a suspected case of typhoid fever in the Borough of Brooklyn, Nov. 27, 1911.

Billings, W. C., P. A. surgeon, granted two months' leave of absence from Dec. 16, 1911.

McLaughlin, A. J., P. A. surgeon, detailed to attend the meeting of the National Association for Preventing the Pollution of Rivers and Waterways, to be held in Baltimore, Dec. 13, 1911.

Smith, A. L., A. A. surgeon, granted thirty days' leave of absence from Dec. 1, 1911.

Thompson, W. R. P., A. A. surgeon, granted fifty-three days' leave from Nov. 1, 1911.

Book Notices

A TEXT-BOOK OF MEDICAL CHEMISTRY AND TOXICOLOGY. By James W. Holland, A.M., M.D., Professor of Medical Chemistry and Toxicology, and Dean, Jefferson Medical College, Philadelphia. Third Edition. Cloth. Price, $3 net. Pp. 655, with 112 illustrations. Philadelphia: W. B. Saunders Co., 1911.

In this edition the revision has been limited to such changes as would not increase the size of the volume. These changes consist in many minor alterations of the text, found necessary to bring it abreast with the most recent and approved researches. The book may be recommended to students and practitioners for its eminently practical consideration of the subject.

THE SURGERY OF THE DISEASES OF THE APPENDIX VERMIFORMIS AND THEIR COMPLICATIONS. By William Henry Battle, F.R.C.S., Surgeon and Joint Lecturer on Surgery to St. Thomas' Hospital, and Edred M. Corner, M.A., M.B., M.C., F.R.C.S., Surgeon in Charge of Out-Patients and the Surgical Isolation Wards to St. Thomas' Hospital. Second Edition. Cloth. Price, $3 net. Pp. 291, with 100 illustrations. New York: William Wood & Co., 1911.

The object of this short but complete treatise on appendicitis is well summed up in the preface to the first edition published in 1904. The writers stated at that time that they had tried to write from the standpoint of the practical surgeon, and before whom a constant stream of illustrative cases is passing. The warm reception accorded this first edition shows how much this method of treating the subject was appreciated. In the preface to the present edition the authors state that they delayed rewriting the book because there were so few new and good contributions to the subject.

In view of the fact that the relation of the movable cecum to constipation and to the pain which recurs after appendectomy has been performed, is attracting much attention at present, especially in German literature, it deserves to have fuller mention here. The St. Thomas Hospital, London, statistics, which show that one case in three will have a second attack of appendicitis after the primary one has subsided without operation, are of great interest.

One of the best chapters is that on appendicitis and peritonitis, which shows that the writers have had a large experience in this subject, and that many of the symptoms of peritonitis which have been thought to be classical are so late in onset as to be of little value from the surgical standpoint of early operation. This is especially true of the presence of fluid in the dependent parts and of tympanites. Great stress is laid on the value of early and rapidly spreading abdominal rigidity as one of the most important early signs of peritonitis, and also of the relatively rapid increase in the pulse rate. The chapter on tuberculosis of the appendix omits much reference to the acute mode of onset of this form of appendiceal inflammation and its great similarity clinically to ordinary forms of appendicitis.

DIE ERWEITERTE ABDOMINALE OPERATION BEI CARCINOMA COLLI UTERI. (Auf Grund von 500 Fällen.) Von Dr. E. Wertheim in Vienna. Paper. Price, $3.65. Pp. 203, with illustrations. Vienna: Urban & Schwarzenberg, 1911.

After a brief introduction in which the history of the operation is considered, there are presented the detailed reports of 500 cases in which the author has operated by his method and which furnish the basis for this, the author's latest exposition of his well-known work along this line. The development of the operative technic and the method of dealing with the ureters, rectum and regional lymph-glands are clearly presented and well illustrated by numerous full-page plates.

Of great interest and importance are the carefully worked out immediate and end-results of the operation. Autopsies were made on all patients dying as a result of the operation and details of the findings given. All patients surviving the operation are followed up to date, the histories showing the recurrences and deaths as well as the survivors. The end-results have been exceedingly good and perhaps surpass those of any other similar series of cases. Surgeons interested in this line of work will find this volume a valuable fund of well-presented information.

DER VESTIBULÄRE NYSTAGMUS UND SEINE BEDEUTUNG FÜR DIE NEUROLOGISCHE UND PSYCHIATRISCHE DIAGNOSTIK. Von Dr. M. Rosenfeld, Oberarzt der Psychiatrischen und Nervenklinik zu Strassburg i. E. Paper. Price, 2.40 marks. Pp. 57. Berlin: Julius Springer, 1911.

In concise statement this brochure of fifty-seven pages deals with vestibular nystagmus in its relation to neurologic and psychiatric diagnosis. The author's position as chief physician of the Strassburg Nerve Clinic has given him especial opportunities to test the diagnostic value of the new reflex which Bárány has done so much to bring to our attention. In addition, Professor Rosenfeld gives an admirable description of the best technic with which to elicit this important reflex. The literary references at the end of the little volume are highly valuable. Neurologists and otologists will be particularly grateful to the author for his contribution.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 10. Chairman, Dr. W. H. Sanders.

ARIZONA: Phoenix, January 2-3. Sec., Dr. Ancil Martin.

COLORADO: State Capitol Building, Denver, January 2. Sec., Dr. David A. Strickler, 612 Empire Building.

DISTRICT OF COLUMBIA: Washington, January 9. Sec., Dr. George C. Ober, 125 B St. S.-E.

ILLINOIS: Coliseum Annex, Chicago, January 17-19. Sec., Dr. James A. Egan, Springfield.

INDIANA: State House, Indianapolis, January 9-11. Sec., Dr. W. T. Gott, 57 State House.

MINNESOTA: State University in Minneapolis, January 2-5. Sec., Dr. W. S. Fullerton, 214 American National Bank Building, St. Paul.

NEW HAMPSHIRE: State House, Concord, January 9-10. Regent, Mr. H. C. Morrison, State Library.

NEW MEXICO: The Capitol, Santa Fé, January 14. Sec., Dr. J. A. Massie.

NEW YORK: January 30-February 2. Chief of Examinations Division, Mr. Harlan H. Horner, Albany.

NORTH DAKOTA: Grand Forks, Jan. 2. Sec., Dr. G. M. Williamson.

OKLAHOMA: Oklahoma City, January 9-12. Sec., Dr. John W. Duke, Guthrie.

OREGON: Portland, January 2-4. Sec., Dr. E. B. McDaniel, 704 Electric Building.

RHODE ISLAND. State House, Providence, January 4-5. Sec., Dr. Gardner T. Swarts.

SOUTH DAKOTA: Huron, January 10-11. Sec., Dr. L. G. Hill, Watertown.

UTAH: Salt Lake City, January 1. Sec., Dr. G. F. Harding, 310 Templeton Building.

VERMONT: Montpelier, January 8-11. Sec., Dr. W. Scott Nay, Underhill.

WASHINGTON: Spokane, January 2. Sec., Dr. F. P. Witter, Traders' Block.

WISCONSIN: Milwaukee, January 9-11. Sec., Dr. John M. Beffel, 3200 Clybourn Street.

Arkansas Eclectic May Report

Dr. E. H. Stevenson, secretary of the Arkansas Eclectic Board of Medical Examiners, reports the written examination held at Little Rock, May 10-11, 1911. The number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 13, of whom 12 passed and 1 was rejected. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
Bennett Medical College	(1907)	85.5
Eclectic Medical University, Kansas City	(1910)	83.7, 87.5; (1911) 75.5, 82, 84.4, 84.8, 85.2, 86.1, 86.5, 89.5, 89.5.

REJECTED		
Eclectic Medical University	(1911)*	81.7

* Rejected on account of failure to furnish satisfactory credentials.

District of Columbia April, July and October Reports

Dr. George C. Ober, secretary of the Board of Medical Supervisors, reports the written examinations held at Washington, in April, July and October, 1911. The number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. At the examination held in April, the total number of candidates examined was 6, of whom 3 passed and 3 failed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
George Washington University	(1910)	76.5, 80.3
Georgetown University	(1910)	80.5

FAILED		
Howard University, Washington, D. C.	(1906)	58.6
George Washington University	(1910)	65.7
Ohio-Miami Medical College	(1910)	70.3

At the examination held in July, the total number of candidates examined was 9, of whom 6 passed and 3 failed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
George Washington University	(1911)	81.7, 82.6, 82.8, 91.1.
Georgetown University	(1910)	75.1
Woman's Medical College of Pennsylvania	(1911)	87.5

FAILED		
Howard University, Washington, D. C.	(1910)	72.1
George Washington University	(1911)	68.9
University of Virginia	(1908)	71.1

At the examination held in October the total number of candidates examined was 11, of whom 10 passed and 1 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
George Washington University	(1910) 83.4; (1911) 77.3, 80.7, 84.2	
Georgetown University	(1910) 88.7; (1911)	77.5
Howard University	(1910) 77.4, 89.7; (1911)	80.5
University and Bellevue Hospital Medical College	(1909)	90.8
FAILED		
University of Michigan, College of Medicine	(1910)	71.1

Kansas October Report

Dr. H. A. Dykes, secretary of the Kansas Board of Medical Registration and Examination, reports the written examination held at Topeka, Oct. 10-12, 1911. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 18, of whom 9 passed and 9 failed. Twenty-seven candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Rush Medical College	(1911)	83
Chicago College of Medicine and Surgery	(1911)	79
Northwestern University Medical School	(1911)	75
Kansas Medical College	(1911)	82
University Medical College, Kansas City	(1911)	77
St. Louis University	(1911)	85
Medical College of Ohio	(1906)*	...
University of Oklahoma	(1911)	90
Fort Worth University	(1911)	77
FAILED		
University of Arkansas	(1911)	66
Chicago Medical University	(1911)†	26
Rush Medical College	(1911)	70
Keokuk Medical College, College of Phys. and Surgs.	(1907)‡	...
Kansas Medical College	(1911)	71
University of Louisville	(1911)	69
Eclectic Medical University, Kansas City	(1911)	67
St. Louis College of Physicians and Surgeons	(1911)	65
Barnes Medical College	(1908)	53

LICENSED THROUGH RECIPROCITY

College.	Year Grad.	Reciprocity with
Denver Homeopathic Medical College	(1908)	Colorado
College of Physicians and Surgeons, Chicago	(1910)	Illinois
Drake University	(1910)	Missouri
College of Physicians and Surgeons, Keokuk	(1880)	Illinois
State University of Iowa, College of Medicine	(1892)	Iowa
Kentucky School of Medicine	(1883)	Missouri
University of Louisville	(1910)	Kentucky
Hospital College of Medicine, Louisville	(1905)	Kentucky
College of Physicians and Surgeons, Baltimore	(1907)	Maryland
Grand Rapids Medical College	(1907)	Michigan
Columbian Medical College, Kansas City	(1900)	Missouri
University Medical College, Kansas City	(1910, 2) Iowa; (1910) Missouri; (1911) Nebraska.	
St. Louis University	(1905) (1909)	Missouri
Missouri Medical College	(1893)	Missouri
Kansas City Homeopathic Medical College	(1902)	Nebraska
Washington University, St. Louis	(1905) (1908)	Missouri
Beaumont Hospital Medical College	(1895)	Missouri
Medical College of Ohio	(1880) Missouri; (1897)	Ohio
University of Tennessee	(1909)	Tennessee
Meharry Medical College	(1911)	Tennessee
University College of Medicine, Richmond	(1908)	Delaware

* No grade given.

† There is no such institution in Illinois recognized as a medical school.

‡ Withdrew from the examination.

New Mexico October Report

Dr. J. A. Massie, secretary of the New Mexico Board of Health and Medical Examiners, reports that at the meeting held at Santa Fe, Oct. 9-10, 1911, sixteen candidates were licensed on presentation of satisfactory credentials. The following colleges were represented:

LICENSED ON PRESENTATION OF SATISFACTORY CREDENTIALS

College	Year of Grad.
Cooper Medical College	(1883)
Bennett Medical College, Chicago	(1908)
Medical College of Indiana	(1904)
University of Missouri	(1898)
Barnes Medical College	(1905)
St. Louis College of Physicians and Surgeons	(1906)
University Medical College, Kansas City	(1896) (1911)
Medico-Chirurgical College of Kansas City	(1902)
University of Buffalo	(1899)
Ohio Medical University	(1903)
Medical College of Ohio	(1889)
Western Pennsylvania Medical College	(1891)
Chattanooga Medical College	(1904)*
Baylor University, Dallas	(1909)
Milwaukee Medical College	(1897)

* Licensed through reciprocity with Oklahoma.

Medicolegal

Secretaries of Board of Health Not Liable for Loss of Diploma —Value and Use of a Diploma

(*Whiteside vs. Adams Express Co. et al.* (Neb.), *131 N. W. R.* 953)

The Supreme Court of Nebraska affirms a judgment for the defendants in this case, which was brought to recover $20,000 from the express company and the secretaries of the state board of health for damages alleged to have been sustained by the plaintiff by reason of the loss of his medical diploma issued to him by an eastern college. The plaintiff, as an applicant for a license to practice medicine in Nebraska had sent his diploma to the board of health with a request that a license be issued to him. The diploma was received by the secretaries, examined, passed on favorably, and, as was their custom, placed in a mailing case, properly directed to the applicant and delivered to the express company, but when he received the mailing case the diploma was not therein, and was lost. He had given no instructions as to the method of returning the diploma to him, nor had he furnished any postage or other funds to pay for its return. The method of transmission adopted by the secretaries for the return of the diploma was the usual and customary method adopted by them for the return of diplomas to applicants for license. The court particularly holds that the selection of the carrier and the delivery of the diploma to it for return was not actionable negligence on the part of the secretaries rendering them personally liable in damages for the loss of the diploma.

Incidentally, the court suggests that there was error in an instruction which told the jury that, if they found in favor of the plaintiff, their verdict should be for an amount merely nominal, "five cents only;" but, as the verdict was in favor of the defendants, the erroneous instruction could work no prejudice to the plaintiff.

The court further says that the deposition having been taken of the physician in charge of the college, when he was asked if a diploma was of any value to a physician, in the course of his answer he stated that some liked to display their diplomas in their offices, when he volunteered the remark (possibly to show his wisdom): "In the West they do; but in this part of the world a man of any prominence would be ashamed to display his diploma in his office; would consider it a piece of poor taste." This would no doubt have been stricken out as an immaterial, voluntary statement displaying "poor taste;" but, instead of adopting that course, the plaintiff took the deposition of another physician, in a Massachusetts city of near 40,000 population, who interviewed a great number of physicians, and found that many of them did display their diplomas, giving the names and street numbers of those who exhibited the "poor taste." However, this was a collateral question of no moment, and the court did right in refusing to admit the second deposition in evidence.

Malpractice in Treatment Does Not Alone Render Liable for Death

(*Cochran's Administratrix vs. Krause* (Ky.), *137 S. W. R.*, 1053)

The Court of Appeals of Kentucky holds that one whose treatment is merely shown to have aggravated a patient's trouble and increased the danger is not liable for his subsequent death, for, under the statute of that state, there can be no recovery for the death of a patient unless it results "from an injury inflicted by negligence or wrongful act."

In this case a trouble having set up in one of the ears of the patient, he was advised by a physician that he had an abscess, and that an operation was necessary, but he was not disposed to submit to one, and seeing the defendant's advertisement in a newspaper, went to his office. He told the defendant in substance what the physician previously consulted had said to him, and the defendant advised him that an operation was not necessary, and undertook to cure him. He then paid the defendant $3.50, and the defendant gave him a treatment which consisted in pounding around the ear with something

V. 5 1911

similar to what is used in massaging in barber shops. At that time there was a slight swelling back of the ear, and there had been for some time a discharge of pus from the ear. He went back to the defendant on three other occasions, and the effect of each treatment was the same; that is, it caused the swelling and pain to increase. After the fourth visit to the defendant, finding that he was getting worse and not better, he went to another physician, who advised him that he was suffering from mastoiditis. That was confirmed by an operation, but soon a second one had to be performed for an abscess in the temporal lobe of the brain, and within two months thereafter death ensued, when a post-mortem examination was made, which showed that another abscess had formed in the cerebellum, and that that abscess was the cause of death.

The court says that the plaintiff's evdence showed very clearly that there was negligence on the part of the defendant in the treatment of the case. But that was not enough to warrant a recovery in an action like this to recover for the death of the patient. It was apparent from the evidence that pus had formed in the mastoid process and was discharging at the ear when the man went to see the first physician, and that the condition had existed for some days before that time. Whether the abscesses had then formed in the temporal lobe of the brain and in the cerebellum, or whether they formed after that, was entirely a matter of conjecture under the evidence. It was true that the treatment which the defendant administered aggravated the trouble and increased the danger. Still the fact remained that the court was left entirely to theorize as to what was the cause of the abscess that caused the man's death. The evidence entirely failed to show that the mistreatment of the malady by the defendant caused the man's death. To submit the matter to a jury would be to allow them to theorize on evidence and to speculate without anything to show that the man would not have died just as he did if he had not been treated by the defendant. The evidence taken as a whole tended as much to show that his death was due to the delay in performing the operation as to any other cause, and it was wholly a matter of conjecture that if the operation had been performed on the day he went to see the defendant, his life could have been saved. The court therefore concludes that the trial court properly refused to submit the case to the jury and directed a verdict for the defendant.

Rescinded Revocation of License no Bar to Renewal of Charges (*Frascella vs. Board of Medical Examiners* (*N. J.*), 79 *Atl. R.* 1063)

The Supreme Court of New Jersey says that, under "An act to regulate the practice of midwifery," the certificate of the prosecutrix was revoked by the State Board of Medical Examiners, in November, 1909. In June, 1910, after the prosecutrix had sued out what is called a writ of certiorari for the purpose of reviewing those proceedings, the board rescinded its action because advised by its attorney that there were fatal defects in the proceedings to revoke the certificate, among them, the fact that no notice was given to the prosecutrix of the hearing, and because the proofs were in the form of exparte (one-sided) affidavits, and thereafter the certiorari proceedings were suffered to lapse. In September, 1910, the same charge was again made, and after a trial on notice, and appearance of the prosecutrix before the board by counsel, a revocation of her license was ordered. Then another writ of certiorari was prosecuted to review both proceedings had before the Board of Medical Examiners.

It was contended that the State Board of Medical Examiners, being a special tribunal, its determination on the first complaint was conclusive on the parties until reversed. The prosecutrix in consequence remained suspended for over seven months, thereby suffering a penalty which the board was unable to rescind. Its action, therefore, amounted to a mere restoration of license, but did not and could not remit the penalty of suspension. The second charge, therefore, the board was without purisdiction to entertain, because a person cannot be tried, convicted and punished twice for the same offense. But the court holds that there was no merit in that contention. The fact that a second time the midwife had her license revoked only strengthened the case against her. The provision for licensing these practitioners, and for the taking away of such licenses for violation of law are police measures for the public safety. Highly technical rules, relative only to the criminal code, have no application to such measures. If the first proceeding had been set aside on certiorari, that would have precluded the charge from being preferred a second time. Wherefore, the second writ of certiorari sued out was dismissed with costs.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Journal of Experimental Medicine, Lancaster, Pa.

December, XIV, No. 6, pp. 557-629

1 *Cutaneous Reaction in Syphilis. H. Noguchi, New York.
2 Status of Respiration in Methods of Differential Pressure Compared with that Under Method of Intratracheal Insufflation. J. Auer and S. J. Meltzer, New York.
3 *Venous Pulse. J. A. E. Eyster, Madison, Wis.
4 Biochemistry of Bacillus Lepræ. F. B. Gurd and W. Denis, New Orleans.
5 Relation of Hematin to Pathologic Pigment Formation. W. H. Brown, Madison, Wis.

1. **Cutaneous Reaction in Syphilis.**—The name *luetin* is proposed by Noguchi for an emulsion or extract of pure cultures of *Treponema pallidum* which is designed to be employed for obtaining, in suitable cases, a specific cutaneous reaction that may become a valuable diagnostic sign in certain stages or forms of syphilitic infection. The luetin produces a similar cutaneous reaction in syphilitic and parasyphilitic patients that is most constant and severe in the tertiary and hereditary affections. In Noguchi's series of cases, it was present constantly (100 per cent.) in the manifest tertiary affection, in 94 per cent. of latent tertiary affection and in 96 per cent. of the hereditary affection. During the primary and secondary stages, the reaction is infrequent and when present it is of mild degree. An exception has been found in cases in which energetic treatment has been or is being carried out and in which clinical signs of syphilis are absent. Such cases may show a severe reaction. Apparently this is true especially of the cases treated with salvarsan. In certain cases of old infection in which no treatment has been taken and in which no symptoms have appeared for many years and in the course of which miscarriages have not occurred, the cutaneous reaction has failed to appear. But, despite the absence of symptoms, mothers who have young syphilitic children have usually given the reaction. It remains to be determined in how far the cutaneous reaction with luetin can be used to supplement the Wassermann reaction in determining the complete and permanent suppression of a syphilitic affection. It appears probable that the Wassermann reaction is more constant in the primary and secondary and the cutaneous reaction in the tertiary and latent forms of syphilis. Moreover, it appears that the Wassermann reaction is more directly and immediately affected by antisyphilitic treatment than is the cutaneous reaction.

3. **Venous Pulse.**—This investigation by Eyster comprises a study of venous pulse, carotid, cardiographic and heart-sound records from twenty-one men with normal hearts. The heart sounds were recorded by the method of Einthoven. When correction is made for transmission, the first heart sound begins, on an average, 0.131 of a second before the c-wave of the venous pulse and has an average duration of 0.128 of a second. The second heart sound begins a few hundredths of a second before the v-wave and has a duration of 0.091 of a second. The third heart sound occurs shortly before or is coincident with the beginning of the h-wave. It has an average duration of about 0.03 of a second. Considerable variation from the average positions are noted in individual cases. This is especially true in the relation between the second heart sound and the v-wave. Measurements of the venous pulse- and heart-sound intervals show that the a-c, c-v and v-h venous-pulse intervals, the first to second and the second to third heart-

sound intervals and systole tend to remain fairly constant in length when cardiac cycles of different length are considered. The v-a, h-a and x-a venous pulse intervals, the third to first heart sound interval and diastole tend to vary in length with variations in total length of the cycle. Records of the venous pulse and heart sound obtained from dogs show a similar relation to that found in man. The main difference observed was an earlier occurrence of the first heart sound before the c-wave of the venous pulse.

Journal of Arkansas Medical Society, Little Rock

November, VIII, No. 6, pp. 155-178

6 Treatment of Pellagra. E. H. Martin, Hot Springs.
7 Pathologic Sequences of Neglected Lacerations of Perineum and Cervix; Plea for Immediate Repair. E. E. Barlow, Dermott.
8 Repair of Perineal Lacerations. H. D. Wood, Fayetteville.

Chicago Medical Recorder

November 15, XXXIII, No. 11, pp. 587-654

9 Rabies. A. M. Stimson, Washington, D. C.
10 Duty of Co-operation Between Surgeon and Roentgentherapist in Malignant Disease. N. M. Eberhart, Chicago.

Laryngoscope, St. Louis

November, XXI, No. 11, pp. 1051-1130

11 Papillitis with Otogenous Complications. E. Ruttin, Vienna.
12 Vertigo and Disturbances of Equilibrium in Recent Secondary Syphilis. O. Beck, Vienna.
13 Syllabus for Lecture to Medical Students on Deaf Child. G. Hudson-Makuen, Philadelphia.
14 Preservation of Anterior Wall in External Frontal Sinus Operation. T. J. Gallaher, Denver.
15 Primary Chancre of Tonsil. A. B. Thrasher, Cincinnati.
16 Retropharyngeal Abscess with Paralysis of Esophagus. J. A. Thompson, Cincinnati.
17 *Unusual Instances of Laryngeal Abscess. W. Freudenthal, New York.
18 *Folds and Webs at Upper End of Esophagus. H. P. Mosher, Boston.
19 Safe and Rapid Procedure for Submucous Resection of Deflected Nasal Septum with Presentation of New Septal Forceps. A. M. Macwhinnie, Seattle, Wash.
20 Tonsil Separator. B. Higbee, Louisville, Ky.
21 New Instrument to Remove Nasal Wall in Cases of Empyema of Maxillary Antrum. H. A. Alderton, Brooklyn.
22 Early Books on Education of Deaf. F. R. Packard, Philadelphia.
23 Carcinoma of Nasopharynx. C. M. Brown, Buffalo.

17. Laryngeal Abscess.—In October, 1910, Freudenthal's patient complained of a lancinating, sticking pain in the hard palate, the molar teeth, and the back of the head. The pain was confined to the left side only. Three days later there was quite an increase of the hoarseness which had been previously present, but as the voice had always been husky and his father was similarly affected he had paid no attention to that point. However, the pain in the back of his head and in the molar teeth continued and he went from one physician to another, was treated for neuralgia, etc., and was finally advised to have a few teeth drawn, which was done, but without any relief. Finally dyspnea and dysphagia set in and Freudenthal saw him five months after the onset of his sickness. Examination showed nothing unusual in the pharynx but the larynx presented a picture such as might have been expected in a case of malignant tumor. There was an irregular mass on the left cord which did not move freely, almost constant expectoration and a very strong *fcter ex ore*. He had lost weight steadily, 20 or 30 pounds, had no appetite and experienced difficulty in swallowing, etc. There were no signs of tuberculosis or syphilis, consequently a malignant tumor was strongly suspected. A small piece was removed, but did not show any signs of malignancy, nor did the mass look like an abscess at that time. About a week later, when the patient was again seen, the appearance was somewhat changed. The movements of both cords were much restricted, which could not be explained by the presence of a tumor confined only to one side. At his next visit both vocal cords looked about the same. The picture was that of bilateral abductor paralysis. Five or six days later the whole process appeared to be in the left aryepiglottic fold. An incision was made and the man felt somewhat better, but later the same condition presented itself as before, i. e., only the larynx was affected. He had some dyspnea and was advised to go to a hospital in order to have a tracheotomy done, but refused. A little later he returned with decided dyspnea. The left arytenoid was much swollen, presenting a typical picture of an abscess. An incision was made and all the symptoms improved. He expectorated a good deal of pus and the vocal cords gradually began to move again. He was feeling very comfortable, but in a few weeks the whole process returned. On one occasion he had so much dyspnea that it was thought best to perform a tracheotomy at once. The patient, however, refused any operative intervention. The next day he vomited a great deal of pus and blood and felt much better. He felt quite comfortable afterward, but there was always more or less dyspnea. Later a tracheotomy was done. Freudenthal says it cannot be doubted that the man first suffered from a retropharyngeal abscess, though the collection of pus was so small that it escaped the notice of several physicians. Later this abscess, too, emptied itself into the larynx where it affected the left arytenoid, spreading from there in different directions.

18. Folds and Webs at Upper End of Esophagus.—Mosher cites a case of a true web of the upper part of the esophagus. There was a doubtful history in the case of the swallowing of some caustic. The patient had had trouble with swallowing for fifteen years. The examination disclosed about an inch below the cricoid cartilage a thin web which surrounded the esophagus. It was in the form of a diaphragm with a small central opening. The nature of the web did not become clear until Mosher put the mechanical dilator through the lumen of it, spread the dilator and pulled it back a little. The manipulation put the whole diaphragm on the stretch and made its real character plain. This procedure suggests a method of examining the upper part of the esophagus, which should help markedly in determining the presence of true webs. It might be called retrograde dilatation and examination. By it all adventitious folds are done away with by the opening of the esophagus. In the case of the web, which was just mentioned after the diaphragm was put on the stretch, the ring of tissue was divulsed by pulling the dilator up. After this soft bougies were passed at intervals three times. The patient was quickly and easily cured.

Medical Fortnightly, St. Louis

November 25, XXXX, No. 10, pp. 476-496

24 Principles Involved in Operations for Hernia. St. E. Sanders, Kansas City, Mo.
25 Conservative Treatment of Pelvic Infections. C. W. Wahrer, Fort Madison, Iowa.
26 Transmission. D. L. Field, Jeffersonville, Ind.

Journal of Indiana State Medical Association, Fort Wayne

November 15, IV, No. 11, pp. 569-594

27 Toxemia of Pregnancy. G. Van Sweringen, Fort Wayne.
28 Justification of Early Prostatectomy. F. H. Jett, Terre Haute
29 Common Causes and Treatment of Difficult Labor. E. E. Wishard, Noblesville.
30 Triple Pregnancy, with Report of Case. J. R. Hume, Milroy.

American Journal of Medical Sciences, Philadelphia

December, CXLII, No. 6, pp. 781-936

31 *Myocardial Changes in Two Hundred and Eighty-Seven Cases of Endocarditis. H. Brooks, New York.
32 Report of Case Demonstrating Pulsus Alternans, Blocked Auricular Extrasystoles and Aberrant Ventricular Electric Complexes. L. B. Rosenthal, New York.
33 *Acute Dilatation of Stomach in Pneumonia. M. H. Fussell, Philadelphia.
34 Lobar Pneumonia of Micrococcus Catarrhalis and Bacillus Coli Communis Origin. W. L. Niles and F. S. Mearn, New York.
35 Symptomatology and Diagnosis of Cervical Rib. J. L. Miller, Chicago.
36 Diagnosis and Operative Treatment of Spondylitis and Some Other Forms of Vertebral Disease. B. Sachs, New York.
37 Spontaneous Intraperitoneal Hemorrhage. J. W. Churchman, Baltimore.
38 Consideration of Some Non-Tuberculous Lung Infections. G. H. Evans, San Francisco.
39 *Roentgen-Ray Studies of Serofibrinous Pleuritis. W. Engelbach and R. D. Carman, St. Louis.
40 *Meiostagmin Reaction. E. P. Bernstein and I. Simons, New York.
41 *Treatment of Bronchial Asthma. L. L. Lemann, New Orleans.
42 Asthma and Tuberculosis. H. Z. Giffin, Rochester, Minn.
43 Phlebitis Migrans. W. W. Herrick, New York.
44 *Cystopyelitis Due to Infection by Bacillus Coli Communis: Its Symptomatology and Diagnosis. S. Wassermann, Cleveland.

31. Myocardial Changes in Endocarditis.—Brooks made a detailed study of the types of myocardial disease which he has found associated with endocarditis in his autopsy series. The study is based on 236 cases of chronic endocarditis, thirty-five of acute endocarditis and sixteen of associated acute and

V. 5
1911

chronic endocarditis. He found that myocardial disease is present in greater or less degree in practically all cases of endocarditis acute or chronic. The type and degree of these changes determine, to a large degree, the possibilities and the future of any case of endocarditis. The most frequent changes in the myocardium in association with endocarditis are degenerative ones. Inflammatory lesions are relatively rare. In most instances the myocardial change is not determined by, nor is it the direct result of the endocarditis, but is caused independently by the same, affiliated, or by entirely independent conditions. The most frequent form seen in chronic or late acute cases is fatty degeneration, a lesion which differs in no material histochemical respect from that involving voluntary muscle. From analogy, it seems that this degeneration in most instances succeeds a primary parenchymatous alteration. As a sequence to fatty degeneration, fibrous replacement and probably brown atrophy frequently appear. There is no regular association between the special valve lesion and the type of associated myocardial degeneration, except that these changes appear more constantly and in more serious grade in aortic than with other lesions, probably because of mechanical changes.

33. **Acute Dilatation of Stomach in Pneumonia.**—Fussell believes that acute dilatation of the stomach is one of the rare abdominal conditions in which medical men can both advise and administer the treatment to the exclusion of the surgeon. The first requisite is early diagnosis. Sudden abdominal distention occurring in the course of pneumonia must bring the thought of acute gastric dilatation at once to the practitioner's mind. Distention, collapse, increased gastric tympany, pain, vomiting, are the suspicious signs. Before the patient is moribund, often before the diagnosis is definitely determined, and, as a diagnostic step, a stomach tube must be introduced and lavage practiced. If the contents of the stomach are foul and copious, or if there is much flatus, relief will be almost instantaneous and if the dilatation occur after the crisis, recovery may be confidently expected. The lavage must be practiced as often as the distention occurs. When a patient is collapsed, with running pulse, it is often feared that the passage of the stomach tube may be fatal. This is a mistake. On the contrary, the tube is easily passed and relief is marked even in most desperate cases in the midst of an attack of pneumonia. The position of the patient is of some importance. In distention of the stomach there is constriction of the duodenum under the root of the mesentery and the collapsed small intestines are far down in the pelvis, making the mechanical obstruction still more marked. By turning the patient on the right side or on the face, this element is probably largely removed. All food and drink by the mouth must be interdicted. Strychnin and eserin hypodermically have seemed of value in two of Fussell's cases.

39. **Serofibrinous Pleuritis.**—The authors found that the location of the fluid in serofibrinous pleurisy is variable. In a great majority of the cases it is more or less in the vertical position in the upright chest. The location is probably dependent on the most constant position assumed by the patient during the acute stage of the disease. Adhesions forming at this time encapsulate the effusion, fixing it permanently in this portion of the chest. The encapsulation of serofibrinous effusion in different positions of the pleura will explain the discrepancy of the physical findings with relation to the displacement of organs, Grocco's sign, obliteration of Traube's space, mobility with change of position of the chest and other confusing physical findings.

40. **Meiostagmin Reaction.**—The meiostagmin reaction has not proved satisfactory as a diagnostic aid in the authors' work.

41. **Treatment of Bronchial Asthma.**—Lemann did not find the blood-pressure usually high in paroxysms of asthma nor increased by epinephrin administered hypodermically in such paroxysms, but tended rather to be lowered. Epinephrin hypodermically frequently relieves the paroxysm, probably by relaxing the bronchial spasm. He says that the sheet anchor in the treatment of bronchial asthma is iodin, usually in the form of potassium iodid. The practically unanimous testimony of patients is that under its administration the paroxysms grow much less frequent and of less severity. It is not necessary to give large doses of the drug, therefore it is usually possible to avoid any disturbance of the stomach. A prolonged course for several months of 10 to 15 grains of potassium iodid, three times daily, should first be given and thereafter these doses should be given for periods of ten days, alternating with ten days of rest. Another favorite prescription is to direct that the iodid be taken for the first ten days in every month. With either of these methods it is possible to keep up a sufficient saturation with iodin to bring about excellent therapeutic effects without causing any of the undesirable by-effects of iodism.

44. **Cystopyelitis.**—This disease, Wassermann says, is well defined, both etiologically and clinically and strikingly resembles in this respect the so-called infectious diseases. The *Bacillus coli communis* is the most frequent organism causative to and characteristic of the disease. Cystopyelitis is a febrile disease; the fever is often of the relapsing type, extending over variable periods of time. Any obscure fever, as well as any unaccountable anemic condition in girls, with or without fever, is suspicious of latent pyelitis. Acid, turbid urine, containing pus cells and the *Bacillus coli communis*, is a positive finding confirmatory of such a condition.

American Journal of Urology, New York

October, VII, No. 10, pp. 367-416

45 Clinical Study of Renal Function by Means of Phenolsulphonephthalein. E. L. Keyes and A. R. Stevens.
46 Inspection Following Ureteral Catheterization. A. Nelken, New Orleans.
47 Causes of Failure of External Urethrotomy. H. A. Kraus, Chicago.

Journal of South Carolina Medical Association, Charleston

November, VII, No. 11, pp. 399-430

48 Tuberculin Diagnosis in Pulmonary Tuberculosis. C. F. Williams, Columbia.
49 Scab Formation in Nose: Its Proper Etiology and Treatment. W. P. Porcher, Charleston.
50 Case of Hyperpyrexia Due to Pelvic Abscess. F. W. Griffith, Asheville, N. C.

American Journal of Orthopedic Surgery, Philadelphia

November, IX, No. 2, pp. 153-267

51 Roentgen-Ray Studies of Chronic Arthritis. G. R. Elliott, New York.
52 *Prognosis in Chronic Arthritis. C. F. Painter, Boston.
53 Traumatic Arthritis as a Late Complication of Fractures of the Upper Extremity. P. LeBreton, Buffalo.
54 *Case of Coxa Vara, with Roentgen-Ray Picture Before and After Development of the Bony Deformity. J. Ridlon, New York.
55 Bilateral Congenital Dislocation of the Lower End of the Ulna. S. F. Jones, Denver.
56 Reasons for State Care of the Crippled and Deformed; Problems Involved. H. W. Orr, Lincoln, Neb.
57 Results of Muscle Group Isolation in Treatment of Paralyses of the Extremities. N. Allison and S. I. Schwab, St. Louis.
58 Psoas Abscess from Lumbar Retroperitoneal Lymph-Glands. M. H. Rogers, Boston.
59 Fracture of the Internal Epicondyle of the Femur. M. Ishimoto and K. Kaneko, Tokio, Japan.
60 *Operative Treatment of Congenital Wry Neck. J. K. Young, Philadelphia.
61 *Recognition of Congenital Visceral Ptosis in Treatment of the Badly Poised and Poorly Nourished Child. J. E. Goldthwait and L. T. Brown, Boston.

52 and 61. Abstracted in THE JOURNAL, June 17, 1911, p. 1847.

54. **A Case of Coxa Vara.**—Ridlon's case shows that either the symptoms of coxa vara may be present without any separation at the epiphyseal line between the head and neck of the femur, and be due to weakness and sensitiveness of bone at this point, or that a coxa vara may begin by the epiphyseal line opening out in front in a way that cannot be shown in a Roentgen ray negative and that gives no shortening. He has long noticed the frequency of coxa vara in fat children with undeveloped sexual organs, occurring at about the period of adolescence, and he says care should be taken in this class of cases not to mistake beginning coxa vara with beginning hip disease. It also seems probable that the rare and little understood condition called adolescent rickets is part and parcel of the same changed bony condition, and that

this condition accounts for at least some of the fractures that occur at this age. The condition of the bones appears to Ridlon, clinically, to be quite different from the bones in infantile rickets. For in infantile rickets while the bones remain soft they can sometimes be bent to nearly a right angle before they will break. Recently he saw a fat boy, of the undeveloped feminine type, break his tibia by suddenly sitting down on it on the floor from the standing position. He was standing on one foot with the other leg crossed, lost his balance and sat down on his leg, breaking the tibia obliquely at about the middle. As to the orthopedic treatment of coxa vara, Ridlon is inclined to put more trust in a plaster spica with the limb well abducted, and axillary crutches for a time, than in the use of ambulatory traction splints and perineal crutches.

60. Abstracted in THE JOURNAL, June 17, 1911, p. 1745.

Vermont Medical Monthly, Burlington

November, XVII, No. 2, pp. 261-267

62 *Anoci-Association: A New Principle in Surgery. G. W. Crile, Cleveland.

62. Abstracted in THE JOURNAL, Sept. 9, 1911; p. 925.

Journal of Ophthalmology and Otolaryngology, Chicago

November, V, No. 11, pp. 341-374

63 Broad Keratome in Removal of Dislocated Lens. A. E. Ewing, St. Louis.
64 Copiopia Hysterica, with Report of Two Cases. W. E. Shahan, St. Louis.
65 Surgical Operative Steps in Closure of Cleft Palate. G. V. I. Brown, Milwaukee, Wis.

Annals of Surgery, Philadelphia

December, LIV, No. 6, pp. 721-858

66 *Value of the Leukocyte Count in Acute Surgical Diseases. H. W. Hewitt, Detroit.
67 Transplantation of Free Flaps of Fascia. J. S. Davis, Baltimore.
68 *Experiences in Thoracic Surgery Under Anesthesia by the Intratracheal Insufflation of Air and Ether. C. A. Elsberg, New York.
69 *Peritoneal Adhesions. E. H. Richardson, Baltimore.
70 Pathogenesis and Diagnosis of Surgical Diseases of the Pancreas. L. J. Hammond, Philadelphia.
71 *Gastric and Duodenal Ulcer. A. B. Mitchell, Belfast, Ireland.
72 *Early Diagnosis of Carcinoma of the Colon. J. Burke, Buffalo.
73 *Non-Traumatic Large Hemorrhage Into the Kidney Substance or Its Surroundings. R. S. Fowler, Brooklyn.
74 Operative Treatment of the Deformity of Pott's Disease. R. Whitman, New York.
75 Modified Autogenous Grafting and Turning Skin Flaps to Cover Granulating Surfaces. M. B. Tinker and H. L. Prince, Ithaca, N. Y.
76 A New Container for Sterilized Operating Supplies. K. Connell, New York.

66. **Value of the Leukocyte Count.**—Hewitt believes that in acute inflammatory surgical diseases repeated counts at frequent intervals should be made, and if the polymorphonuclear percentage rises while the total number remains stationary or falls, immediate operation should be insisted on. In some cases he found that the leukocyte count did not help in making a diagnosis, and in these cases he has disregarded the blood-findings entirely and depended on the history and physical signs; but in cases in which the count has been positive its value could not be easily underestimated. Leukocyte counts are sometimes valuable for their negative findings, e. g., they are frequently of assistance in making a diagnosis between a small ovarian cystoma with a twisted pedicle and a pyosalpinx or appendicitis. Hewitt insists that the laboratory findings must be correlated with the clinical to be of any value at all. The total count alone is insufficient. The differential count, *per se*, is of value in diagnosis, but of little value in prognosis. The total and differential counts, when taken together and correlated with the clinical findings, are frequently of great value both in diagnosis and prognosis. No definite percentage of polymorphonuclear cells can be taken to positively indicate infection. If we have a percentage of between 75 and 80 of polymorphonuclear cells, infection is probable; if we have a percentage of between 80 and 85, infection is usually found; if we have a percentage above 85, infection is almost invariably encountered. The duration of the infection must be taken into consideration. Counts are more positively diagnostic when taken early in the course of an acute surgical disease. Infection will frequently, when of long duration, overcome the patient's resistance and so vitiate the value of the count.

68. **Intratracheal Insufflation Anesthesia.**—In thoracic operations, as well as in a large number of thoracotomies for empyema that Elsberg has done, this anesthesia was a very good one. In not a single instance were any changes in the patient's condition observed when the pleural cavity was first opened; the pulse remained regular and of good quality and the patient's color remained good. In several of the cases there were adhesions between the visceral and parietal pleuræ, but in most of the patients there were no adhesions, and the practically normal pleural cavity was invaded. Elsberg has not yet had occasion to operate on a patient in whom both pleural cavities have to be opened. There is, however, every justification for the belief—based on the results of animal experimentation in which both pleural cavities were widely opened, and on the experiences with insufflation as a method of artificial respiration in several patients in whom all respiratory movements had been abolished—that it will be safe to open both pleural cavities if necessary, as far as the dangers from the double pneumothorax are concerned.

69. Also published in *Bull. Johns Hopkins Hospital*, August, 1911, and abstracted in THE JOURNAL, Sept. 2, 1911, p. 843.

71. **Gastric and Duodenal Ulcer.**—Mitchell says that sufferers from chronic ulcer of the stomach or duodenum, which has failed to respond to medical treatment, may confidently be recommended to consider operative treatment, the prospects being an immediate risk not exceeding 2 per cent. with 90 per cent. probability of complete and permanent cure.

72. **Diagnosis of Colon Carcinoma.**—When a pale patient, who up to a certain given moment has enjoyed perfect health, particularly as regards his digestion, suddenly, with or without dietary indiscretion, e.g., eating of flatulence-producing vegetables, begins to suffer from colicky pains in his abdomen with rumbling noises, and either in addition to obstinate constipation or diarrhea notices a great loss of weight and increasing muscular weakness, Burke says cancer of some part of the colon should be immediately suspected; when the stools contain blood, mucus or pus, or all three at one time, the further suspicion of cancer is strengthened; and if a mass is found in any part of the abdomen with or without visible peristalsis, the almost positive determination that a cancer is present is made. He emphasizes the fact that tumors of the sigmoid are very rarely palpated in early stages; what we do sometimes feel and interpret as sigmoid cancer is either chronic inflamed and enlarged colon or scybala above the strictured bowel; that not always where we find a mass in the abdomen does it signify the exact location of the suspected cancer as was demonstrated in a case of another carcinoma of the sigmoid flexure which he once saw, in which a hard mass could be palpated in the left upper quadrant and the diagnosis of cancer at that point was made, but the autopsy revealed a circular scirrhus carcinoma of the sigmoid, and the mass that appeared in the upper portion of the descending colon was hardened feces. This point is important on account of the surgical attempt to relieve the pathologic conditions, and the placing of the necessary incision. If a doubt exists as to the anatomic situation of this tumor, the Roentgen ray has become a valuable adjunct to the diagnostic armamentarium.

73. **Large Hemorrhage into Kidney.**—Of the eight cases reported by Fowler six patients were operated on, of whom four recovered and two died; a mortality of 33⅓ per cent. The two patients not operated on both died. The technic of the operative treatment will, he says, depend on the pathologic condition found at operation. If bleeding is limited to the perirenal fat, this must be excised completely, the hematoma removed and adequate drainage provided. If, however, the bleeding proceeds from the interior of the kidney and has later involved the perirenal fat, not only must the perirenal fat and hematoma be removed, but a nephrectomy done as well. Thorough removal of the fatty tissues infiltrated with blood-clot is essential, as the post-mortem history of these cases shows that suppuration easily follows.

Journal of Iowa State Medical Society, Clinton

November 15, 1, No. 5, pp. 230-284

77 Progress in Surgery. J. C. Rockafellow, Des Moines.
78 Drainage of Lymph Channels from Mammary Gland and Surgical Relations of Axilla and Supraclavicular Region. H. J. Prentiss, Iowa City.
79 *Treatment of Cancer of Breast. L. W. Littig, Davenport.
80 Diagnosis and Treatment of Carcinoma of Uterus. W. B. Laforce, Ottumwa.
81 Emergency Surgery Not Due to Accidents. D. C. Brockman, Ottumwa.
82 Treatment of Acute Lobar Pneumonia. C. P. Howard, Iowa City.

79. Abstracted in THE JOURNAL, July 29, 1911, p. 419.

Journal of Biological Chemistry, Baltimore

December, X, No. 5, pp. 345-432

83 *Utilization of the Proteins of Corn. L. B. Mendel and M. S. Fine, New Haven, Conn.
84 Formation of Glycocoll in the Body. A. A. Epstein and S. Bookman, New York.
85 A Method for the Preparation of Nucleic Acid. A. W. Peters, Boston.
86 *Relation of the Pancreas to the Lipase of the Blood and the Lymph. C. L. von Hess, Chicago.
87 New Compounds of the Choline Type. G. A. Menge, U. S. P. H. and M.-H. Service.
88 Interrelation of the Ammonia and Carbon Dioxid Content of the Blood. R. Hopkins and W. Denis, New Orleans.
89 *Influence of an Excessive Water Ingestion on a Dog After a Prolonged Fast. P. E. Howe, H. A. Mattill and P. B. Hawk, Chicago.

83. **Utilization of the Proteins of Corn.**—In the authors' experiments, corn proteins, partially purified, were somewhat less thoroughly utilized than meat. Evidence was presented to indicate that this small difference may in great part be attributed to the cell residues remaining in the corn preparation employed.

86. **Relation of Pancreas to Lipase of Blood and Lymph.**—Von Hess' results indicate that the pancreas and the thyroid are not the main but only the partial source of the blood-lipase and only in so far as they play their part in the activity of the tissues in general. Serolipase variations are produced by a general stimulation or depression of the body-cells, while the small changes, which experimental lesions of these glands may produce are compensated for through the delicate mechanism governing the concentration of the serolipase.

89. **Excessive Water Ingestion After Eating.**—A fasting dog weighing 26.33 kg. was subjected to a fifty-nine-day fast receiving each day 700 c.c. of water by means of a tube. On the sixtieth day and for the three following days the water ration was increased 200 per cent. and at the end of this water period the former water level (700 c.c.) was again assumed. Determinations of total nitrogen and of nitrogen in the form of urea, ammonia, creatinin, creatin, purin and allantoin were made. The analytical data indicated that the water had brought about an increase of 77.5 per cent. in the total nitrogen output for the first day of the period, the course of the excretion decreasing from this point to the end of the period, the value for the final day being about normal. The excretion of nitrogen in the form of ammonia was markedly increased during the period of high water intake, a feature which was interpreted as indicating that the large volume of water had caused a pronounced stimulation of the gastric function. The output of nitrogen in the form of creatinin was found to undergo a sharp increase on the initial day of the water period. This point is significant in view of the former finding of a decreased output of creatinin when a normally fed organism is subjected to the influence of water drinking or fasting. In the present instances the two agencies were working simultaneously. For a period of eight days preceding the water period the urine of the dog had been practically creatin-free. With the inception of the interval of high water intake creatin in considerable quantity appeared in the urine and continued to appear throughout the entire period. The copious water ingestion was found to produce a pronounced increase in the allantoin-nitrogen elimination and a more than compensating decrease in the excretion of purin-nitrogen. The low purin values are believed to be due to the fact that certain oxidative processes have been so stimulated as to oxidize a certain quota of the purin-nitrogen precursors into allantoin. The total purin values (allantoin + purin) were increased during the water period. The total nitrogen values when taken into consideration in connection with the values for creatin-nitrogen and total purin nitrogen are believed to furnish strong substantiation for the hypothesis that the increased nitrogen output associated with increased water ingestion is due to a true stimulation of protein catabolism rather than to a flushing of the tissues.

Iowa Medical Journal, Des Moines

November, XVIII, No. 5, pp. 209-252

90 Treatment of Large Surface Wounds. E. E. Bust, Clarion.
91 Abdominal Adhesions. M. Emmett, Atlantic.
92 Chronic Middle-Ear Catarrh. H. G. Langworthy, Dubuque.
93 Exophthalmic Goiter. D. L. Rundlett, Sioux Falls, S. D.
94 Administration of Ether for General Anesthesia. J. E. Brinkman, Waterloo.
95 Surgical Psychoses with Report of Two Cases Following Operations. A. P. Stoner, Des Moines.
96 Clinical Briefs in Surgery. C. E. Ruth, Des Moines.

Albany Medical Annals, New York

November, XXXII, No. 11, pp. 637-698

97 Diagnosis and Treatment of Thyroid Gland Diseases. G. E. Bellby, Albany.
98 Chemical and Physiologic Importance of Nucleic Acids and Their Cleavage Products. V. C. Myers, Albany.
99 Albany Hospital: Ninth Report of Pavilion F, Department for Mental Diseases, for Year Ending Sept. 30, 1911. J. M. Mosher, Albany.

Pennsylvania Medical Journal, Athens

November, XV, No. 2, pp. 85-168

100 *Value of Library to County Medical Society. J. M. Anders, Philadelphia.
101 *Bearing of Pneumonia, Considered as Secondary Malady, on Treatment. H. A. Hare, Philadelphia.
102 *Typhoid with Relapse and Multiple Complications. A. A. Eshner, Philadelphia.
103 Technic and Statistic Results of Wassermann Reaction. J. L. Laird, Philadelphia.
104 Syphilis in Its Relationship to Nervous System. T. Diller and W. R. S. Denner, Pittsburgh.
105 Modern Treatment of Syphilis. J. F. Schamberg, Philadelphia.
106 Treatment of Syphilis. W. F. Donaldson, Pittsburgh.
107 *Care of Advanced Cases of Tuberculosis. W. F. Willcox, Ithaca, N. Y.
108 *Mitral Disease and Tuberculosis. J. T. Ulom, Germantown.
109 Tonsillectomy: Why, When and How, with Blood-Supply and Anatomic Relations of Faucial Tonsils. J. L. Davis, Philadelphia.
110 Some Fundus Changes Associated with Menstrual and Uterine Disorders. G. E. Curry, Pittsburgh.

Colorado Medicine, Denver

November, VIII, No. 2, pp. 371-397

111 Clinical Experience with Salvarsan. H. Sewall, Denver.
112 A Comparison of the Wassermann and Noguchi Reactions and the Effect of the Treatment of These Reactions. S. Simon, Denver.
113 The Wassermann Reaction and Its Relation to the Diagnosis, Prognosis and Therapy of Syphilis. W. C. Mitchell, Denver.
114 The Making of a Physician. E. B. Shaw, Las Vegas, N. M.

100. **Value of Library to County Medical Society.**—Anders says that if administered as a corollary to the scientific work of the county medical society and if "our faith" in its incalculable benefits were made a vital part of our daily life and not a mere expression of opinion, much good wark could be accomplished by county medical libraries under existing conditions. Not less than three-fourths of the books in the larger medical libraries now extant have been donations and legacies. Among the responses received from the secretaries in Ander's collective investigation, it was found that in those county societies having a library, the secretary performed the duties of a librarian without compensation. The objection to the effect that adequate quarters cannot be procured, as a rule, cannot hold in cities and larger towns because in every county a suitable room could be found as the result of well directed and persistent effort. The argument against county medical libraries, which sets forth as a reason for the nonpracticability of the scheme that physicians' residences are too far removed from one another, also fails when the present methods of transportation are carefully considered, more especially if the plan previously suggested by Anders of endeavoring to make the usual meeting places of the society the depository of the library so that books could be drawn and returned and journals read on the same days of the regular sessions of the society.

101 and 107. Abstracted in THE JOURNAL, Oct. 21, 1911, pp. 1389 and 1390.

102. **Typhoid with Relapse and Multiple Complications.**—The concurrence of nephritis, intestinal hemorrhage, parotitis, neuritis, hyperpyrexia as complications in the course of an attack of typhoid, with persistence of typhoid bacilli in the blood to the twelfth week of the disease are the interesting features in Eshner's case.

108. **Mitral Disease and Tuberculosis.**—In his series of 400 cases, Ullom met but three times an association of the two diseases. One was a pronounced case of mitral stenosis with all the physical signs well marked with a lesion at the left apex. Tubercle bacilli were found in the sputum. The patient was treated in a sanatorium and came back in good condition. Her lesion has remained quiescent and she is in good condition. Another young lady suffered from a mild mitral regurgitation with a right apical lesion. She had tubercle bacilli also, took treatment at home, gained in weight and is well and working to-day. The third patient was a man with mitral stenosis and a right apical lesion. He had profuse hemorrhages and showed tubercle bacilli in the sputum. He was working at the time of his appearance at the institute, showed no tendency to progression, but has disappeared from observation. Ullom says that while these cases are too few from which to draw conclusions, yet it does seem striking that all three should show a tendency to cure.

Ophthalmic Record, Chicago

November, XX, No. 11, pp. 649-710

115 Small Flap Sclerotomy. H. Herbert.
116 *Intestinal Sepsis as Etiologic Factor in Cardio-Vascular Disease and Associated Ocular Affections. S. D. Risley, Philadelphia.
117 Broad Keratome in Removal of Dislocated Lens. A. E. Ewing, St. Louis.
118 Study of Sympathetic Ophthalmia. A. Elschnig, Prague, Austria.

116. **Intestinal Sepsis.**—By illustrative examples of ocular disease Risley endeavors to show the apparent relationship of cause and effect between such diseases and faulty intestinal conditions and diseases of the cardiovascular system. He suggests that in some of the cases of serious ocular disease in which there is no obvious relationship to syphilis or tuberculosis or other demonstrable etiologic factors, the cause may be found in infectious or toxic influences originating in the alimentary tract.

Military Surgeon, Washington, D. C.

November, XXIX, No. 5, pp. 481-606

119 What Are Best Available Measures to Diminish Venereal Diseases Among Soldiers and Sailors and Along What Lines Should We Seek Cooperation of Federal, State and Municipal Authorities? E. B. Vedder, U. S. Army.
120 Sanitary Troops in Organized Militia of United States. H. D. Thomason, U. S. Army.

New York Medical Journal

December 9, XCIV, No. 24, pp. 1157-1208

121 Consideration of Nitrous Oxid with Oxygen as an Anesthetic in General Surgery. H. W. Kearney, Washington, D. C.
122 Diagnostic Value of Lateral Thoracic Glands. M. Manges, New York.
123 Reduction of Cancer Mortality. J. M. Wainwright, Scranton, Pa.
124 Cancer Statistics and Their Meaning. I. S. Wile, New York.
125 Training of Nursery Maids in United States. C. G. Kerley, New York.
126 Modernized Views of Rabies. L. D. Frecoln, Philadelphia.
127 Nomenclature of Poliomyelitis (Acute Infectious Paralysis). R. M. Randolph, Washington, D. C.
128 *Various Infections and Inflammations in Children Treated with Tincture of Iodin. E. M. Sill, New York.
129 Treatment of Persistent Occipitoposterior Position. S. Robbinovitz, New York.

128. **Treatment of Infections and Inflammations in Children.** Sill has used iodin very extensively as a local antiseptic and germicide in a variety of cases, principally, however, in various infections or inflammations of the throat. He has seen severe sore throats clear up and heal in two or three days, after one or two applications that ordinarily might take a week to cure by other methods of treatment. Although the burning or pain in the throat is quite severe while it lasts, it does not last long and the good results justify its use. Where a milder application is desired for the throat, and especially deep down in the throat and nose, equal parts of glycerin and tincture of iodin will be found satisfactory. Sill has used this latter preparation in the treatment of babies as early as 1 year of age with good results.

He gives a list of 660 cases treated with tincture of iodin as follows: Amygdalitis, 400; chronic and subacute otitis media, 32; otalgia, 2; pharyngitis, 42; diphtheria of the tonsils, 44; nasal diphtheria, 8; nasal and tonsillar diphtheria, 1; stomatitis, 65; thrush, 5; laryngeal croup, 9; laryngitis, 28; scarlet fever, 9; measles, 7; nasal discharge, 6; (other than diphtheria), multiple furunculosis, 2. It is his firm belief that tincture of iodin, used as a local application to the throat in the acute contagious diseases early in the attack and during the active stage of the disease, will prevent very materially the spread of the contagion to other members of the family or outsiders.

Medical Record, New York

December 9, 80, No. 24½, pp. 1159-1208

130 Correction of Nasal Deformities by Mechanical Means and by Transplantation of Bone. W. W. Carter, New York.
131 Congenital Megalocolon and Anal Atresia. H. B. Sheffield, New York.
132 Odyssey of a Diagnosis. C. K. Austin, Paris, France.
133 Strabismus in Infants and Young Children. I. M. Heller, New York.
134 Real Value of Carbohydrate Feeding in Typhoid. E. R. Gardner, Pittsburgh.
135 Convenient Instrument for Ready Clinical Investigation of Sensibility to Coolness and Warmth. T. A. Williams, Washington, D. C.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

Lancet, London

November 25, CLXXXI, No. 4604, pp. 1457-1534

1 *Parasite of Cancer. Sir H. Butlin.
2 Medical Aspects of Some Social Questions. G. A. Gibson.
3 Treatment of Cleft Palate. R. W. Murray.
4 Evolution of Modern Gynecology. A. E. Giles.
5 Metastatic Suppurative Cyclitis Occurring in Woman with Pyemia; Abscission; Recovery. Sir W. Collins.
6 *Urethral Grafts. A. Chiasserini.
7 Case of Tricuspid Regurgitation. R. O. Moon.
8 *Bacterial Infection of Stomach Wall Treated by Vaccine Therapy. F. K. Cahill.

1. **Parasite of Cancer.**—Butlin reviews his previous papers on this subject in which he likens the cancer cell to a protozoon. He says that there is no one cell for every kind of malignant disease, nor is there one cell for the carcinomata and another for the sarcomata. Every variety of malignant tumor has its own typical cell and the characters, the selection of locality and relations of each variety of cancer cell to the host are sharply defined and differ as widely as, though not more widely than, those of the varieties of protozoa which belong to the same species. He cites examples to illustrate some of the resemblances of the life-history of the cancer cell to that of the parasitic protozoa. It seems that they are as careful in the selection of locality as are the varieties of parasitic protozoa. They spread in the interstices of the tissues in which they first appear, as do certain of the protozoa. They are conveyed in the blood and lymph, as the parasitic protozoa are. They are deposited in distant tissues and organs like the parasitic protozoa, and they show just the same predilection for certain tissues and organs as do the protozoa. They are like many of the parasitic protozoa in the fact that they live almost entirely by osmosis. Like the protozoa, they sometimes live for long periods of time in the body of the host without any sign of their presence and perhaps in a state of lethargy, until their vigor and activity are restored to them by some lowering of the resistance of the host, or by some change in the part in which they had been lying which renders it more suitable to their necessities. They do not appear to furnish toxins which are dangerous to the health of the host, so that their effects are produced (like the effects of such parasites as *Myxobolus pfeifferi*) by mechanical causes, destruction of the tissues in which they live and multiply, the stoppage of blood and lymphatic vessels and the changes consequent on this stoppage. These conditions are naturally more dangerous when they affect the vital parts. On the other hand, when, like the protozoa, the cancer cells are attacked by pathogenic organ-

V. 5
1911

isms, bacteria and bacilli (as is almost invariably the case when they become exposed), they are rapidly destroyed, sometimes in great masses, and the effect on the host is disastrous. Some cancer cells can live for a long time outside the body of the host, although they do not, so far as we know, belong to the class of organisms which are sometimes not parasitic. They can live for weeks in glass tubes and then be implanted, as if they were just taken from the mass in which they lived. At present the cancer cells can only be implanted with success in animals of the same species as the animal from which they were taken. In this respect, again, they resemble certain of the protozoa. It may be that, with greater practice and experience, they will be induced to grow and multiply in animals of a different species, but Butlin very much doubts it, just as he doubts whether *Babesia bigemina*, a parasite of cattle, will be successfully implanted in a sheep. Cancer cells, like the parasitic protozoa, are never transformed into tissues of the host and the structures which they cause to be built up are for their own service, not for the service of the host. They are not themselves transformed into any other kind of tissue, nor do they transform the cells of the body into cancer cells. From the moment they are first unmistakably cancer cells, they remain cancer cells and from that moment they pursue only those two objects which are pursued by the protozoa, to live and to reproduce. And if they fail in these objects both the individual and the species perish. In reproduction they breed as true as any protozoon. Not only do carcinoma cells reproduce carcinoma cells and not sarcoma cells, but it is invariably the same variety of cell which is reproduced, with the same properties and powers and characteristics. It has been said that the cancer cells differ from the protozoa in the circumstance that they are not constant in their method of reproduction, that they multiply by budding or by mitosis, as pleases them, and that the protozoa never do so. If all the protozoa were thrown into a common receptacle for study they would also be found to vary in their method of reproduction. Butlin believes it is only because the cancer cells have been treated in this fashion that they seem to be subject to no method. But, he says, separate them and study them in families and it will be found that they are just as bound in this respect as the families of protozoa. The cells of carcinoma multiply by endogenous multiplication and the cells of sarcoma multiply by fission or by budding.

6. **Ureteral Grafts.**—The results of his experiments on the ureter of dogs with muscular grafts is here stated by Chiasserini. He examined histologically sections taken from eighteen cases. In experimenting he made use sometimes of pieces of vein (external jugular, femoral and saphenous), sometimes of the carotid artery. He reached the ureter by the extraperitoneal route and sutured the two ends of the ureter to the transplanted vessel by Carrel's method (slightly modified), having first cut away a piece of ureter somewhat shorter than the graft. In twelve cases the continuity between the two ureteral ends was reestablished, but a stenosis or a complete occlusion corresponding to the vascular graft was the usual result. Briefly, the conclusions he came to are as follows: 1. There is a possibility of the vessel introduced between the two ureteral ends becoming firmly united to them. 2. The piece transplanted, a few days after the operation becomes shortened so as to draw the two ureteral ends nearer together. 3. The graft becomes thicker and hard, while the lumen is nearly obliterated. 4. The stenosis causes a stoppage in the flow of the urine with consecutive dilatation of the canal of the ureter and hydronephrosis. It is certain at any rate, he says, that vascular grafts cannot be used to replace a segment of the ureter. However, every time he left a catheter in the ureter for several days he was able to observe in the graft evidences of regeneration which were lacking in most cases where no catheter was left *in situ*. The results obtained by him from ureteral autotransplantations are more favorable, but no report can be made on that now.

8. **Treatment of Bacterial Infection of Stomach Wall.**—Cahill's patient suffered from foul breath. He did not complain of "indigestion," he had a hearty appetite, but eating or starving he had a "foul breath." The stomach emptied itself in normal time. Gastric chemistry was normal. Having secured specimens from his stomach, the cultivation yielded streptococcus and *Bacillus coli*. Cahill had a "vaccine" prepared consisting of a streptococcus from the urine and a bacillus coli from the stomach. He gave four doses, and the "foul breath" completely disappeared and has not returned up to the present, now seventeen months afterwards.

Journal of Obstetrics and Gynecology of British Empire, London

October, XX, No. 4, pp. 151-210

9 Past Work of Obstetrical Society of London and Some of the Obstetrical and Gynecological Problems Still Awaiting Solution. A. Routh.
10 Pregnancy Complicated by Fibroids. W. E. Fothergill.
11 Occlusion of Lower Part of Vagina with Absence of Uterus. J. P. Hedley.

Australasian Medical Gazette, Sydney

October, XXX, No. 10, pp. 547-632

12 Evolution of Treatment of Disease. W. T. Hayward.
13 Evolution of Surgery. G. A. Syme.
14 Progress in Neurology and Psychiatry. W. B. Smith.
15 Conditions of Work and Health. J. S. Purdy.
16 Vaccine and Serum Therapy. H. B. Allen.
17 Three Cases of Mal-Development of Uterus. T. G. Wilson.
18 *Case of Bacillus Coli Infection, Treated Medically, Surgically and Hypnotically. J. Boyd.

18. **Bacillus Coli.**—A little girl, 5 years old, was suddenly seized with pain so severe over the bladder region as to cause violent screaming and convulsions. For two days previously the parents noticed that her micturition was somewhat irritating. She was treated medically for two weeks when the bladder was explored for stone per urethram, with a negative result. Boyd opened and drained the bladder, the symptoms being so urgent, but no stone was present. After six weeks the paroxysms were as bad as ever. The urine was highly acid, with a little pus and much mucus. *B. coli* were present. Potassium citrate, freshly prepared each time, was administered and the urine kept alkaline. She then had acute pain over the left kidney, lasting about a week, gradually disappearing. All sorts of bladder sedatives and antispasmodics were tried from time to time. Fresh buchu infusion in large quantities was the only one that seemed to have an effect and not much at that. Stock coli communis vaccines did no apparent good, morphia having to be administered for extra severe attacks. Meanwhile the urine was spasmodically improving. At the end of a month Boyd tried Kerley's plan of giving hexamethylenamin for five days, then potassium citrate for three, alternately. The hexamethylenamin certainly helped to clear the urine, which was now free from pus, but aggravated the symptoms, so it was stopped. During this time a measles rash developed, but whether it was true measles or a rash due to the vaccine Boyd could not say, as she had had an attack of measles shortly before. Curiously enough, while the rash was out (five days) the pains disappeared, only to recur as it faded. From being a particularly good and most intelligent little child, she had developed into a perfect little fiend, refusing to drink, take her medicine, in fact doing everything possible to annoy and hurt her mother. Boyd then proposed hypnotism. After some little trouble, Boyd got her into Forel's second stage. Suggestions were then made. All pain disappeared for the next five days, when it returned for two or three hours very sharply. Pus reappeared in the urine for a few hours. Another nine days passed without pain, when it returned for a quarter of an hour after passing water. The urine then remained alkaline and clear. In all, hypnosis was induced some thirty times.

Journal of Tropical Medicine and Hygiene, London

November 15, XIV, No. 22, pp. 333-348

19 Etiology of Beriberi. H. Fraser and A. T. Stanton.
20 Cultivation of Malarial Parasites in Vitro by Preventing Development of Complement in Human Blood Employed. C. C. Bass.

Glasgow Medical Journal

November, LXXVI, No. 5, pp. 321-399

21 Pathologic Institute of General Hospital. Sir W. Osler.
22 Origin and Development of Glasgow School of Medicine: From Maister Peter Lowe to Sir William T. Gairdner. A. F. Fergus.
23 Suicide from Cut-Throat and Drowning. D. J. Guthrie.

Annales de l'Institut Pasteur, Paris

October, XXV, No. 10, pp. 705-784

24 Research on the Physiology of Plants. I. (Nutrition minérale des végétaux. Absorption et excrétion des éléments minéraux par les racines et par les feuilles. Excrétion des substances organiques.) P. Mazé.

25 Hereditary Transmission of Experimental Relapsing Fever. (L'hérédo-contagion des spirilloses.) L. Nattan-Larrier.

26 *Scarlet Fever in Apes. (Essais de transmission de la scarlatine aux singes.) K. Landsteiner, C. Levaditi and E. Prasek.

27 Origin of Antibodies in Experimental Trypanosomiasis. (Sur l'origine des anticorps chez les cobayes trypanosomiés.) S. Mutermilch.

26. See editorial in THE JOURNAL, November 25, p. 1769.

Annales de Médecine et Chirurgie Infantiles, Paris

November 15, XV, No. 22, pp. 689-720

28 *Spasm of the Glottis as Sole Manifestation of Tetany. (Spasme de la glotte; manifestation unique de tétanie.) H. Triboulet and Harvier.

29 *Orthopedic and Operative Treatment of Little's Disease. (Traitement orthopédique et chirurgical de la maladie de Little.) A. Broca.

28. **Spasm of the Glottis.**—Triboulet and Harvier state that in ten cases of laryngospasm the Chvostek sign was positive and explained the nature of the spasm. But in a recent case there were no other signs of tetany except this spasm of the glottis. The patient was an infant over 1 year old, strong and healthy except for the transient attacks of suffocation. The electrical excitability was extreme, and they insist that the electric reaction should be tested as a routine measure in all cases of spasm of the glottis. It is possible that suffocation from this cause has been mistakenly ascribed to enlargement of the thymus.

29. **Congenital Spastic Paralysis.**—Broca discusses the clinical picture and the various methods of treatment that have been applied, emphasizing in conclusion that treatment should be exclusively orthopedic and educational. Neither the internist nor the surgeon can claim to cure the disease, but vast functional improvement may be realized by training the mind and motor functioning. It may be necessary to do some surgical work to restore the mechanical balance which first renders such training possible. For this tenotomy has proved its usefulness and osteotomy likewise to a certain extent in the inveterate cases. They regard the future of rhizotomy, that is, section of the spinal nerve roots, for Little's disease, as more dubious.

Archives des Maladies du Cœur, Etc., Paris

November, IV, No. 11, pp. 673-736

30 Case of Diastolic Murmur of Cardio-Pulmonary Origin. (Cas de souffle diastolique d'origine cardio-pulmonaire.) Devic and Bouchut.

31 Technic for Examination of the Blood, Blood-Producing Organs and Cardiovascular System. (Sur les moyens techniques employés en clinique pour l'étude du sang, des organes hématopoiétiques et de l'appareil circulatoire.) E. Savini.

Bulletin de l'Académie de Médecine, Paris

November 7, LXXV, No. 36, pp. 209-220

32 *Effect on Health of Excessive Summer Heat, and Means to Counteract It. (De quelques conséquences de la grande chaleur.) M. de Fleury.

32. **Consequences for Adults of Great Summer Heat.**—De Fleury states that following the great heat of last summer there was an unusually large number of cases of dysenteriform enteritis, appendicitis and paratyphoid, with enlargement of the liver, and in some the disturbances have not entirely passed away even yet. Other persons who did not seem much affected at the time suffer now from gastro-intestinal disturbances, congestion of the liver or some cutaneous affection of digestive origin. The tendency of the heat to increase the virulence of pathogenic germs, the abuse of cooling drinks, diluting the gastric juice and intestinal secretions, the tendency of meat and eggs to spoil during hot weather with the resulting toxic action—these factors cooperate in the disturbances caused by excessive heat in summer. Deficiency of gastric secretion is the probable cause of the loss of appetite, and the secretion in other glands is probably reduced likewise. But the most important factor, he thinks, is the diversion of the water in the organism from the kidneys to the skin, so that fluids are excreted by the skin almost entirely. Toxic products are thus retained in the body as the sweat eliminates but a comparatively small proportion of them in comparison with the kidneys. Sweat is much less toxic than urine, and least so when there is little muscular exercise, as in summer. He cites physiologists to the effect that the total mass of the apparatus concerned in the excretion of sweat is equal to only about a fourth of the filtering apparatus of the kidneys. The reduction in the output of urine thus leads to imperfect elimination of waste products. The arterial pressure also suffers from the excessive loss of fluids in the sweat, the heart showing on auscultation unmistakable signs of fatigue. The result of all these factors is a congestion and overworking of the liver, similar to the effect on the liver of residence in a tropical climate. Persons who lived mainly on fruits and vegetables escaped the above gastro-intestinal disturbances. Milk and eggs seemed to have a more injurious action than well cooked meat once a day, thoroughly masticated. In prophylaxis De Fleury advised his patients to drink very little at meals and not at all during the period of gastric digestion, but to drink in abundance when the stomach was empty. Those who had the courage to take only hot drinks benefited materially by this. These measures were advantageously supplemented by sterilization of the intestines by means of lactic ferments. Stimulation of the kidney functioning is important, and for this he gave lactose, with small doses of caffein in combination with theobromin; this increased the blood-pressure and restored kidney functioning.

Lyon Médical, Lyons

November 5, CXVII, No. 45, pp. 945-1004

33 Great Reliability of the Pirquet Cutaneous Tuberculin Test for Young Children. (Sur l'utilisation clinique des réactions à la tuberculine chez l'enfant.) M. Péhu.

November 12, No. 46, pp. 1005-1068

34 Acute Fatal Staphylococcus Cerebrospinal Meningitis in Young Man. (De la méningite cérébro-spinale aigue à staphylocoque; à propos d'un cas traité sans succès par le sérum de Dopter.) F. Barjon and G. Dujol.

Presse Médicale, Paris

November 15, XIX, No. 91, pp. 929-936

35 *The Adrenals in Erysipelas. (Les capsules surrénales dans l'érysipèle.) M. Lesné, Gerard and Francon.

36 Syphilitic Polyneuritis. (La polynévrite syphilitique, existe-t-elle?) R. Demanche and P. J. Ménard.

35. **Involvement of the Adrenals in Erysipelas and Other Acute Infections.**—Lesné has encountered nine cases recently in which patients with erysipelas became extremely weak, with incessant vomiting, a tendency to dyspnea, diarrhea and extremely low blood-pressure, the pulse rapid and irregular, the liver enlarging, and the assumption of acute disturbance in the adrenals was confirmed by necropsy. The patients were middle-aged or elderly and all died, death occurring suddenly. Others have described a similar syndrome in the course of scarlet fever and diphtheria. If the blood-pressure is tested systematically in the acute infectious diseases it may prove possible to detect this insufficiency on the part of the adrenals and counteract it by giving epinephrin. This he has accomplished in a number of other cases of erysipelas, and he describes two of the most typical, the arterial pressure dropping from 14 or 16 to 11, but it was restored to the former figure by epinephrin treatment and kept there while the patients recovered. He adds that in nine of the twenty-six fatal cases in his service between January and June this year, the patients succumbed with signs of inflammation of the adrenals.

Revue de Chirurgie, Paris

November, XXXI, No. 11, pp. 663-838

37 *Treatment of Pseudarthrosis in General and Especially with Grafts. (Le traitement des pseudarthroses en général et en particulier par les greffes.) P. Barbet. Commenced in No. 9.

37. **Pseudarthrosis.**—Barbet summarizes, with a number of illustrations, 199 cases of pseudarthrosis, including some from his own experience, and discusses the various causal factors, prophylaxis and treatment. One of the most important factors is the ill advised resection of sequesters, thus depriving the parts of the necessary support and bone-regenerating tissues. In the overwhelming majority of cases the pseudarthrosis is due to some local cause, interposition of soft parts, suppuration or comminution. In other cases the delay in

V. 5 1911

union is traceable to some metabolic disturbance, probably connected with defective functioning of some gland with an internal secretion. In some cases these factors may be associated. General treatment may include the supply of mineral substances needed for callus formation, and for this he prescribes a glycerophosphate mixture, combining the glycerophosphates of sodium, calcium, magnesium and potassium. Organotherapy may also prove useful and a number of cases are on record in which thyroid treatment hastened consolidation, while it failed in others. It might be wise to combine the drug or organotherapy with removal of the local cause. Prophylaxis consists mainly in operating at once when there is reason to suspect interposition of muscle, and, further, in reimplanting the sequesters. In exceptional cases after removal of the local cause the sluggish bone growth may be stimulated by friction and possibly by local injection of blood according to Bier's technic. In all cases, Barbet says, good physical and mental hygiene is an important adjuvant. Massage and cautious use of the limb are not curative measures, but aid in the effect of the others. Resection or freshening the fragments and replacing them in normal position are the main points in treatment, aiming to restore the continuity of the bone with the minimum of shortening, implanting a bone graft if necessary. If the reduction promises to hold without support, no direct fixation need be applied and the ordinary devices for immobilizing a recent fracture will be all that is needed. If more is required he prefers ligation to suture, with metal supports and the Lambotte appliance for the large bones. Bone grafts are indicated when without apparent local cause there is delay in bone repair or there is irreparable loss of substance. The ingrafted bone should be taken from the patient and should always be accompanied by the periosteum. Alien bone is unsatisfactory. A free autoplastic operation is almost as successful as a plastic operation with a temporarily pedunculated flap, but the outcome is much better with a permanent pedunculated graft with skin or muscle flap. Progress entails ingenious adaptation of these principles to grafting operations for pseudoarthrosis.

Semaine Médicale, Paris

November 22, XXXI, No. 47, pp. 553-564

38 *Diagnosis of Suppurative Gall-Bladder Disease. (Le diagnostic des cholécystites suppurées.) P. Lejars.

38. Suppurative Gall-Bladder Disease.—Lejars discusses in particular suppurative cholecystitis with cholelithiasis or malignant disease or both, and relates instances to show the difficulty of a correct diagnosis in these groups at times. In one case a married nullipara of 31 had always been well, the urine normal, never any jaundice or pain calling attention to the bile apparatus or stomach. One day symptoms developed suggesting severe acute appendicitis but under medical measures the symptoms subsided and there was apparently no further trouble for two months when a second similar attack developed, with tenderness and enlargement of the gall-bladder. When exposed it was found to contain a single large and old gall-stone filling it nearly completely. The suppuration was the work of colon bacilli, and their entrance on the scene had probably inaugurated the syndrome observed. Differentiation in these latent gall-stone cases is often difficult; when the trouble begins with a stormy onset the gall-bladder is almost the last organ to be incriminated. Association with appendicitis may further complicate differentiation. In another case the supposed suppurative cholecystitis proved to be a postappendicitic accumulation of pus just beneath the liver. Recurrence of a gall-stone trouble after years of peace is strongly suspicious of cancerous degeneration. Symptoms of acute inflammation are often the first signs of the secondary cancer in such cases. He describes a peculiarly instructive case of this kind; the patient at the age of 45 had several attacks of colic in the liver region, without jaundice, recurring during the three following years, but then there was no further trouble for seventeen years when suddenly symptoms of acute suppurative cholecystitis developed; an obstructing gall-stone was removed from the common bile-duct but the gall-bladder was already cancerous.

Beiträge zur klinischen Chirurgie, Tübingen

October, LXXVI, No. 1, pp. 1-239

39 Anaerobic Bacteria in Etiology of Appendicitis. (Bakteriologische und experimentelle Untersuchungen zur Aetiologie der Warmfortsatzentzündung—mit bes. Berücksichtigung der anaeroben Bakterien.) M. Heyde.

40 Technic for Operations on Bile System. (Zur Schnittführung und Technik bei Operationen an Gallenwegen.) P. Sick.

41 Aneurysm of Subclavian Artery. (Die chirurgische Behandlung der Aneurysmen der Arteria subclavia.) H. Rubritius.

42 Physiologic Differences Between Procedures for Negative and Positive Atmospheric Pressure. (Experimentelle Untersuchungen über den physiologischen Unterschied zwischen Unter- und Ueberdruckverfahren.) M. Tiegel.

43 Efficacy of Novaro's Technic for Sterilization of the Hands. (Bakteriologische Untersuchungen über Händedesinfektion nach Novaro.) C. Licini.

44 Efficacy of Partial Continuous Bath in Tepid Chlorine Water. (Das partielle permanente Bad in lauem Chlorwasser.) A. Bailliano.

45 Irreducible Subperiosteal Fracture of the Forearm. (Ueber subperiostale irreponible Frakturen des Vorderarms.) E. Müller.

46 Enterotomy for Intestinal Spasm Caused by Clump of Ascarides. (Fall von Enterospasmus verminosus, geheilt durch Enterotomie.) Kiesselbach.

47 Intersigmoid Hernia. A. Machol.

48 Decompressive Trephining Through the Sella Turcica. (Zur Frage der sellaren Palliativ-Trepanation.) S. Canestrini and G. v. Saar.

49 Fibrous Osteitis in Children. (Ostitis fibrosa im Kindesalter.) P. Frangenheim.

Berliner klinische Wochenschrift

November 20, XLVIII, No. 47, pp. 2089-2144

50 *Radium Emanations in Treatment of Arthritis and Gout. (Klinische Erfahrungen über die Behandlung der Arthritiden und der Gicht mit Radium-Emanation.) F. Gudzent.

51 Blood-Pressure and Carbohydrate Metabolism Under Control of the Chromaffine System. (Beiträge zur Regulation von Blutdruck und Kohlehydrat-Stoffwechsel durch das chromaffine System.) W. Falta and J. G. Priestley.

52 Technic for Freeing Serum from Lipoids and Its Importance for Immunity Reactions. (Ueber immunitätsreaktionen mit lipoidfreiem Serum.) U. Friedemann and E. Herzfeld.

53 Biologic Properties of Mesothorium. (Ueber die biologische Wirkung des Mesothoriums. III. Emanationswirkung.) A. Bickel. (IV. Experimentelle Untersuchungen über die Resorption von Thorium X und Thoriumemanation vom Verdauungskanal, ihre Aufnahme ins Blut und ihre Ausscheidung durch die Nieren.) O. Emsmann.

54 *Nature and Treatment of Painful Paralysis of the Arm in Children. (Zur Auffassung und Therapie der schmerzhaften Armlähmung der Kinder. Dérangement interne des Unterarms.) E. Durlach.

55 Color Reaction in Breast-Fed Infants' Urine. (Zur Engel-Tornau'schen Harnreaktion.) E. Langfeldt.

56 *Some Alienist Problems. (Irrenärztliche Tagesfragen.) A. Leppmann. Commenced in No. 46.

57 Relations Between Human and Bovine Tuberculosis. (Der Bericht der englischen Tuberkulose-Kommission über die Beziehungen zwischen menschlicher und tierischer Tuberkulose.) B. Möllers.

50. Radium Emanations in Gout and Arthritis.—Gudzent reports the results of three years' work in this line at the first university medical clinic at Berlin, in charge of His. The radium emanations have been applied in 400 cases, generally in the form of inhalation in a closed room, for two hours a day, with from twenty-four to thirty-six sittings, supplemented by injections of soluble radium salts in the vicinity of the diseased joint. Complete bed rest, he says, aids materially in the cure, not even massage should be applied until all pains and swelling have subsided. This treatment is supplemented by the ordinary measures, superheated air, electric light and brine baths, etc. The prognosis depends naturally on the existing anatomic changes. Arthritis in children responds particularly well to the radium treatment while arthritis in the senile is scarcely influenced as also true tuberculous and syphilitic arthritis. The discovery that the springs which for ages have had a reputation for curing gout were particularly radio-active led to application of the radium emanations in treatment of gout, and with considerable success. Fifty of the 100 gouty patients thus treated allowed blood to be drawn for reexamination later, and in thirty-seven of these fifty, all traces of uric acid had vanished from the blood. Before commencing treatment the blood had contained from 6 to 13.7 per 1,000 sodium mono-urate. There is generally an exaggeration of symptoms at first but in the third and fourth week great improvement and relief parallel the disappearance of the uric acid from the blood. In very old inveterate cases with severe arthritic changes the local reaction might be too severe, and this class of patients is excluded from the radium treatment. Reexamination of the blood of two patients a year after the course of radium treatment showed it still free from uric acid.

54. **Painful Paralysis of the Arm in Children.**—Durlach ascribes the trouble to some slight displacement of the cartilage. He has recently encountered three cases of the kind; the children were between 2 and 3 and they suddenly let the arm hang limp as if paralyzed, not even moving the fingers. No movement was interfered with except supination of the forearm; the trouble was corrected by oversupination with extension, followed by flexion of the ulnar joint. One of the children was cured at once by this; in the second the apparent paralysis persisted until the child's attention was completely diverted, but the third child persisted in refraining from using the arm. In such a case Durlach advises tying up the sound arm and thus forcing the child to use the arm it holds limp. Efforts to spare this arm only confirm it in the tendency to imaginary paralysis. The affection described is what the French call *dérangement interne;* the snapping sound heard as the trouble is corrected confirms the anatomic basis.

56. **Some Alienist Questions.**—Leppmann remarks that a number of occurrences recently in Germany indicate one of the periodical waves of mistrust and denunciation of alienists, especially those at the head of private sanatoriums for this class of patients. Several damage suits are pending in the courts which emphasize the need of revision of the legislation to define and protect more fully the rights of alienists over their patients. Leppmann cites examples of the harm done by the consultations with lawyers, etc., in the matter of having a guardian appointed, etc. The old method of shutting out all visitors, legal advisers, etc., gives the patient a far better chance for recovery in many cases. Another point on which he asks legislation is that when a person brings suit for damages against an alienist he should be examined for his sanity before the suit is placed on record. In a recent case that dragged along for three years, a former patient sued for 15,000 marks damages on absolutely insane grounds, the lawyers finally informing the court that the plaintiff was unmistakably insane and withdrawing the suit, but the defendants, besides the annoyance, were put to several hundred dollars of expense. In other cases cited the courts refused the appeal for a guardian as the monomaniac proved to be sane on certain subjects; one man, for instance was still a capable carpenter although a maniac on the subject of jealousy of his wife; another man of means with a persecution mania, yet was able to attend to certain business matters and was thus adjudged sane by the court which left him free to squander all his property in combating his imaginary persecutors. Leppmann approves of the French law of partial guardianship, the *partielle interdiction* of the code Napoléon, and would like to have it introduced into Germany.

Correspondenz-Blatt für Schweizer Aerzte, Basel

November 16, XLI, No. 33, pp. 1105-1136

58 *Comparative Temperature Findings. (Vergleichende Temperaturmessungen.) C. Stäubli.

58. **Comparative Temperature Findings.**—Stäubli declares that we are inclined to lay too much stress on the temperature findings, and that the temperature in the rectum is liable to prove misleading unless it is taken after the patient has been some time in bed. Under these conditions the temperature findings in the mouth, the axilla and the rectum run parallel. After physical exercises there is normally a rise in the rectum temperature; it may reach 38.3 C. (100.94 F.), while mouth and axilla show only 37 C. (98.6 F.). Comparing the repeated findings in the mouth and axilla is the only means to determine the actual body temperature, and factors which might influence the temperature in mouth or axilla, such as breathing through the mouth and sweating, must first be excluded. The higher temperature in the rectum after exertion probably results from the changes in the distribution of the blood in the body from the muscular exercise. He adds that the prognosis of pulmonary tuberculosis is growing constantly brighter as we are learning to detect it in an earlier phase. The prognosis now may be said to depend in a large proportion of the cases on the patient's pocketbook and character; that is, on whether he is able and willing to change his mode of life for months and possibly years to make his health his first consideration.

Deutsches Archiv für klinische Medizin, Leipsic

CIV, Nos. 3-4, pp. 269-401. Last indexed November 18, p. 1729

59 *Lecithin Content of Blood in Various Diseases. (Untersuchungen über den Gehalt des Blutserums an ätherlöslichem Phosphor bei verschiedenen Krankheiten.) K. Kimura and W. Stepp.

60 *Diagnostic Importance in Nephritis and Uremia of Increased Nitrogen Content of the De-albuminized Blood Serum. (Verhalten des Reststickstoffes des Blutes bei Nephritis und Urämie.) H. Hohlweg.

61 *Experimental Research on Action of Iron. (Eisenwirkung.) A. Zahn.

62 Disturbances in Vascular Reflexes with Transverse Lesions in Spinal Cord. (Ueber Störungen der Gefässreflexe bei Querschnittserkrankung des Rückenmarks. Zugleich ein Beitrag zur Kenntnis des Gefässnervenverlaufs beim Menschen.) H. Stursberg.

63 Etiology of Erythema Nodosum. (Untersuchungen über Aetiologie des Erythema nodosum.) O. Brian.

64 Eosinophilia in Trichinosis. (Ueber Eosinophilie bei Trichinose.) Huebner.

65 Meat Poisoning in Animals with an Eck Fistula. (Ueber die Fleischvergiftung bei Tieren mit Eck'scher Fistel. Der Krankheitsbegriff der Alkalosis.) F. Fischler.

66 Percussion of True Outlines of the Heart. (Ueber Perkussion der wahren Herzgrenzen.) A. Weber and F. Allendorf.

67 Roentgenoscopy of the Heart in the Tuberculous. (Orthodiagraphische Herzuntersuchungen bei Tuberkulösen.) W. Achelis.

68 *Diphtheria Intoxication with Insidious Course. (Die "schleichende Diphtherievergiftung" und ihre Behandlung durch intralumbale Serum(injektionen.) A. Bingel.

69 Diabetes Insipidus. (Ueber Diabetes Insipidus, zugleich ein Beitrag zur Entstehung des Kochsalzfiebers.) B. Stuber.

70 Research on the Total Metabolism in Animals with an Eck Fistula. (Verhalten des Gesamtstoffwechsels bei Tieren mit Eck'scher Fistel.) E. Grafe and F. Fischler.

59. **Lecithin in the Blood in Various Diseases.**—Kimura and Stepp report research which sustains the statements of others to the effect that the ether-soluble phosphorus in the blood is increased in certain diseases. It was much below the normal average in exophthalmic goiter, nephritis and heart disease. The concentration of the serum seems to influence the lecithin content.

60. **The Residual Nitrogen in the Blood in Nephritis and Uremia.**—By the term residual nitrogen Hohlweg means the nitrogen found in the blood after the albumin has been removed. In health this residual nitrogen averages 31 mg. in 100 c.c. of blood serum, but with insufficient kidneys this proportion increases from 63 to 93 mg. If the proportion keeps below this range the prognosis is relatively good, but if the proportion rises above 60 up to 95 mg. this shows, as a rule, that the patient is not capable of recuperation. The increase in the residual nitrogen is not specific for uremia but is merely one manifestation of the effect of insufficiency on the part of the kidneys. It may thus reveal or exclude renal insufficiency and prove an important diagnostic measure.

61. **Experimental Research on Action of Iron.**—Zahn rendered rabbits anemic by venesection and then treated them with iron, but he was unable to detect any influence of the iron on the regeneration of the hemoglobin or red corpuscles. The regeneration of the blood proceeded parallel in the animals taking iron and in those not given any iron.

68. **Insidious Diphtheria Intoxication.**—Bingel applies this term to what is generally called diphtheric myocarditis; the heart affection seems to be merely one manifestation of a general toxic action. As the original diphtheria is subsiding after an apparently normal course, convalescence is suddenly interrupted by vomiting and the patient refuses all food, while motor agitation, even delirium, alternates with apathy; there is striking pallor and the pulse is soft and faint, although the heart findings are comparatively negative. This syndrome may follow an apparently mild diarrhea, but usually the disease is of a rather severe type. The vomiting and the psychic and vascular disturbances all point to mischief in the central nervous system, the result of the action of the diphtheria toxin. Treatment must be prompt and energetic, and for this he commends lumbar injection of antitoxin and reports some favorable experiences with it, although he was unable to save all his patients. This insidious diphtheria intoxication, he says, is a warning that diphtheria has not lost its terrors even since the introduction of antitoxin. No benefit was derived in his cases from heart stimulants, venesection, saline infusion or other measures. Nothing but lumbar puncture, withdrawing cerebrospinal fluid and replacing it with warmed antitoxin, gave any relief. He made the injection in

V. 5
1911

some cases as a prophylactic measure two or three days after defervescence. When the myocardium or brain had been irreparably injured nothing could save the patients, but the benefit promptly apparent after the injection, the attenuation of the symptoms, arrest of the vomiting, etc., showed the great therapeutic value of the measure, especially in the relief from the incessant vomiting and retching. He reports in detail three fatal cases and eight others terminating in recovery. The by-effects of the lumbar injection of antitoxin were trifling except that in about half the cases the temperature rose about half a degree centigrade or more for a day.

Deutsche medizinische Wochenschrift, Berlin

November 16, XXXVII, No. 46, pp. 2113-2160

71 Douches in Hydrotherapy. (Indikationen und Technik von Duschen.) L. Brieger.
72 *Serious Complications with Bronchoscopy and Esophagoscopy. (Ueber schwere Komplikationen bei der Bronchoskopie und Oesophagoskopie.) W. Kümmel.
73 Research on Fever. (Ueber Entstehung, Wesen und Bedeutung des Fiebers.) F. Rolly. Concluded in No. 47.
74 Tuberculin Reactions in the Eye. (Tuberkulinversuche am Auge.) F. Krusius.
75 Urobilin and Bilirubin in Blood Serum. (Vorkommen von Urobilin und Bilirubin im menschlichen Blutserum.) O. Roth and E. Herzfeld.
76 Outcome of Grafted Hip Joint. (Ein Beitrag zur freien Gelenkplastik.) R. Hinz.
77 Primary Ethyl Chlorid Anesthesia. (Ueber den Chloräthylrausch.) D. Kulenkampff.
78 Treatment of Phlegmonous Disease of the Throat. (Ueber Therapie der phlegmonösen Entzündungen des Waldeyerschen Rings.) E. Winckler.
79 *Physiologic and Pathologic Action of Rarefied Atmosphere in Balloon Trips and Means to Control It. (Physiologische und pathologische Wirkungen des Höhenklimas bei Hochfahrten im Freiballon.) F. J. Flemming. Commenced in No. 45.

72. **Mishaps with Bronchoscopy and Esophagoscopy.**—Kümmel reports four cases in which direct bronchoscopy led to serious complications, with a fatal outcome in one case. Two of the patients were boys of 4½, the others a girl of 9 and a boy of 12. In all there was a subglottic swelling which rapidly increased after bronchoscopy or developed first after it, inducing suffocation which would have proved rapidly fatal in all without the immediate tracheotomy. He discusses the various features of these cases and warns that the use of small tubes may reduce this danger but not abolish it entirely, and he thinks it is enough to forbid bronchoscopy for children under 5 or 6 and for all children with subglottic swelling and possibly for all with the exudative diathesis. In every case all preparations should be made for an emergency tracheotomy when bronchoscopy is attempted. By inserting the bronchoscope through a tracheotomy all danger of this kind is averted, but he laments the necessity for this tracheotomy technic and low bronchoscopy instead of the extraordinarily enticing technic of bronchoscopy through the mouth. But the former permits the use of shorter and wider tubes, both of which are great advantages. With esophagoscopy the danger is from perforation of the esophagus or pharynx wall, and he reports two cases in which this happened to him, not with the esophagoscope but with the preliminary introduction of the sound. In both cases the mishap proved fatal; in both the lack of subjective disturbance at the time and the absence of bleeding as the sound was being introduced without the slightest force, were striking features of the cases. Necropsy showed in one case that the sound must have penetrated for at least 20 cm. into the mediastinal connective tissue after passing through the pharynx wall. An abscess developed outside the esophagus; if this had been promptly opened and the perforation sutured the patient might have been saved. In both cases the perforation occurred with the most cautious introduction of the sound by an expert, but the diseased wall of the organ offered no resistance. It is better to avoid blind procedures of this kind.

79. **Physiology and Pathology of Aviation.**—Flemming remarks that one reason why so little has been written on this subject is that the rapid ascent into the rarefied air brings an apathy which renders the slightest mental or physical exertion disagreeable or impossible, so that the party lose all interest in scientific records. If oxygen is supplied, the mind is reinvigorated and he relates a number of experiences in this line. He says that the pulse shows to a remarkable extent the disturbances in metabolism which occur at a height of 12,000 feet and over; his tables show how the pulse runs up high and how it can be regulated by inhalation of oxygen. Breathing is shallow and irregular and the dyspnea is increased by distention of the intestinal gases. On an average about 1,500 liters of oxygen are required for a four-hour flight in a balloon. He relates that once the flapping of the valve in the mask of one of his party suddenly ceased to be heard, and the man was seen to be livid, respiration imperceptible, hands and knees trembling, his body slumping against the wall of the car. The oxygen tube was found kinked; as soon as it was straightened the cyanosis vanished. These scientific balloon ascents were made under specially favorable conditions for research. It was found that felt boots to the hip were necessary to protect against the extreme cold unless the balloon car was lined with cloth to keep in the body heat. Some interesting experiments were made with cultures of different bacteria exposed to the sunlight at 15,000 feet and then used to inoculate rabbits on return to the earth. Comparative tests showed that five minutes' exposure to the sunshine at 15,000 or 18,000 feet sufficed to kill the bacteria so that no infection resulted while the controls all developed the disease. The same results were obtained with thirty or sixty minutes' exposure to the sunlight at Berlin, and with fifteen minutes' exposure the period of incubation was lengthened to nearly four weeks and the infection proved mild and transient. Further experiments with exposure of the rabbit eye to the sunlight before and directly after the injection showed an attenuating influence from the sunlight, the incubation dragging out to several weeks and the lesion proving mild. He tabulates other findings in regard to the electric conditions of the atmosphere, clouds, etc., his article being a valuable contribution to the subject of the physiology and pathology of high strata of the atmosphere.

Medizinische Klinik, Berlin

November 19, VII, No. 47, pp. 1801-1842

80 *Transplantation of Living Tissues. (Technik und Erfolge der freien Transplantation.) G. Axhausen.
81 Tuberculosis and Its Toxic Influence on Mind and Character. (Tuberkulose und Psyche.) F. Köhler.
82 Reciprocal Relations Between Diseases of the Genital Organs and Sigmoid Flexure. (Ueber Wechselbeziehungen der Genital- und Flexurerkrankungen.) A. Foges.
83 *Testing the Pupil Reaction. (Zur Prüfung der Pupillarreaktion.) R. Rembold.
84 *Filtering Method for Occult Blood in Urine. (Nachweis von Blut im Urine mittels der Filtermethode.) C. Leede.
85 *The Vestibular Apparatus and the Central Nervous System. (Neues Rindencentrum im Kleinhirne. Baranys Symptomenkomplex. Kleinhirnsymptome bei Schädeltrauma.) R. Barany.

80. **Transplantation of Living Tissues.**—In this postgraduate lecture Axhausen reports the achievements to date in this line and discusses the preferable technic. The relative vital independence of different cells and groups of cells is shown by the successful transplantation of living tissue; periosteum taken from the cadaver hours or days after death yet transplanted to a proper soil grows and forms new bone, the certain proof of its independent vitality. Tissue taken from a living being of another species does not display this capacity of independent life; it is an implantation of a foreign body, not a transplantation of living tissue. The higher differentiated the cells, the greater the difficulty of getting them to grow after transplantation, and conditions are most favorable when the tissue is taken from the individual's own body, or from a close blood relation, preferably a young brother or sister of the same sex. Lexer's success encourages further efforts in the line of transplantation of mucosa-lined organs. He resected the sound appendix to apply to fill a gap 8 cm. long in the patient's urethra, first stripping the appendix of its serosa and outer muscular layer. The central end was sutured in place and the peripheral end drawn forward through the urethra. The transplanted mucosa healed smoothly in place and micturition is not interfered with, while endoscopy shows a mucosa lining throughout the urethra. Schmieden utilized for the same purpose in three cases a stretch of ureter from the cadaver of a child or obtained by nephrectomy

on other patients, but Lexer's method has all the advantages of autotransplantation. It is evident that regeneration proceeds from the cells in the mucosa which retain their vitality. Transplantation of fat for cosmetic purposes or to provide a bed for the nerve after neurolysis has proved its feasibility; Axhausen cites in this connection Czerny's autotransplantation of a lipoma to restore the contour of the breast of an opera singer after he had removed the breast for a large benign tumor. Neuber and Bier have also transplanted subcutaneous adipose tissue to correct cicatricial disfigurement using tissue from the patient. In operations for stiff joints, interposition of a scrap of fat seems to give better results than when periosteum is used. Autotransplantation of fascia and tendons is rendering good service in treatment of recurring hernias, paralytic deformities and defects in tendons after casting off of sequesters. For the finger, the transplantation is much more liable to be successful when the preceding lesion healed under multiple transverse incisions rather than under the common radical longitudinal incision. In the latter case the whole cicatrix has to be excised and the defect closed with a plastic operation before the plastic operation on the tendon. In autotransplantation of bones and joints ideal asepsis in the field of operation is not indispensable. Even if part or all of the bone is cast off, the periosteum remains and new bone is formed. Axhausen adds that what the periosteum is to the bone, in this respect, the perichondrium is to cartilage; some of the cartilage cells are liable to retain their vitality and proliferate, the same as tendon tissue. This explains the excellent results obtained in transplanting whole joints. Large flap incisions are indispensable, as also months of immobilization. Too early use of the joints induces conditions like deforming arthritis. Lexer's oldest patient has now worn his transplanted knee for four years and is free from disturbances from it although he uses it actively. Küttner's first patient had the upper third of the femur from a cadaver (removed twelve hours after death and kept for twenty-four hours in salt solution) transplanted into his thigh in place of bone removed on account of a chondrosarcoma. Ten months afterward he was running about with a movable joint. Küttner has recently applied this method also in treatment of tuberculous joint disease; the otherwise inevitable atrophy of the muscles is an argument in favor of doing this in an early stage. In conclusion, Axhausen reviews the cases of successful transplantation of a segment of the saphenous vein to substitute part of an artery resected on account of an aneurysm, Lexer and Enderlen have done this for the femoral artery. Attempts to transplant thyroid tissue have not given durable results to date, Axhausen remarks: the best technic is the implantation of thin slices of autothyroid tissue between the fascia and the peritoneum. Better results have been obtained with transplanted parathyroid bodies, even from other persons. Autotransplantation of the kidney has succeeded in animals and might be considered in the clinic with a ureter fistula for which nephrectomy would otherwise be required.

83. **Testing the Pupil Reaction.**—Helmbold has found that the simple method described succeeds in many cases in which all other methods of investigation fail to reveal any pathologic reaction. In an entirely darkened room the patient looks through lenses of —40 D. at a lamp 15 to 18 feet distant, the flame seen only through an opening not more than 5 cm. in diameter. The flame appears as a small luminous disk. The examiner then briefly shuts off the light by placing his hand or a box over the opening. When this obstruction is removed, the luminous disk is seen to be smaller or changed in shape or it is seen as before. By placing a stronger lens in front of one eye two images of the disk will be seen, one above the other, and they may vary in shape and size. Differences in refraction may have to be corrected, but the reaction to direct, indirect and sensory stimuli can be instructively studied by this means. The strong lenses cause the rays to diverge but when they enter the eye lacking the accommodation reaction, the rays reach the retina nearly parallel.

84. **Improved Technic for Determination of Occult Blood in the Urine.**—Leede's improvement consists in accumulating as many of the blood-corpuscles as possible before applying the guaiac or other chemical tests for occult blood. This he accomplishes by filtering a large amount of the urine and applying the chemical test to the residue left on the filter. The tests are thus made extremely sensitive, revealing invisible blood in the minutest proportions. By heating the urine it is possible to destroy other substances liable to interfere with the findings. Urine two days old seems to give the reaction practically as well as fresh. A suspension of red corpuscles in salt solution, in a dilution of 1 to 800,000 gave positive findings even after six days.

85. **Improved Methods for Testing Functioning of the Cerebellum.**—Barany states that when the cerebellum was excised during an operation or left covered only by the dura and thin skin, he applied tests by freezing a point of the skin by spraying ethyl chlorid on it for two or three minutes. No apparent harm resulted in any instance, not even in a case in which the spraying was repeated a dozen times. He thinks that this harmless method of testing can be applied with confidence also to the cerebrum, and that it promises interesting physiologic findings. He has learned by this means and clinical observation that the center for the movement inward of the arm at the shoulder is located in the cortex of the cerebellum just back of the ear, while a point 5 cm. behind the ear is the center for outward movement of the arm. Barany describes further a special syndrome from cerebellar disease; there is always generally a history of old otitis media and of migraine or epilepsy in the patient or a close relative, vertigo, occipital headache on the affected side, deafness at times while the hearing is good at other times, and a characteristic manner in which the hand and joints of the arm point —the sign of *Vorbeizeigen nach aussen*. He has noticed this latter sign in six or seven cases of trauma of the skull during the last year, always accompanied by vertigo and deafness on the same side. The above syndrome is the result of swelling of the cerebellum or of compression from overaccumulation of fluid, and operative relief is imperative. The incision may have to be carried down through both the dura and the arachnoid, but this is a simple, harmless procedure, he insists, as the middle ear is not opened up. In conclusion he relates a case in which this syndrome followed a firearm wound of the head and he assumed serious injury of the cerebellum, but the prompt subsidence of the symptoms and discovery of the bullet in the auditory meatus, showed that the trouble had been the result merely of concussion of the cerebellum.

Mitteilungen aus den Grenzgebieten der Med. und Chir., Jena
XXIII, No. 5, pp. 739-889. Last indexed October 21, p. 1311

86 *Roentgenoscopy of the Tuberculous Kidney. (Die Nierentuberkulose im Röntgenbilde.) A. v. Lichtenberg and H. Dietlen.

87 *Absorption with Ileus and Peritonitis. (Ueber die Resorption bei Ileus und Peritonitis.) E. Enderlen and G. Hotz.

88 *The Leukocyte Count in Appendicitis. (Ueber den Wert der Leukocytenzählung bei Appendicitis.) W. Schmidt.

89 *Tardy Traumatic Hemorrhage from the Meninges. (Ueber traumatische meningeale Spätblutungen.) A. W. Meyer.

86. **The Tuberculous Kidney as Seen with the Roentgen Rays.**—Lichtenberg and Dietlen remark that while a number of casual roentgenographs of renal tuberculosis have been published in the literature, they know of no systematic series of research in this line on record. They have thus examined with the Roentgen rays eight patients with tuberculosis of one kidney and three with bilateral renal tuberculosis. The findings in the kidney after nephrectomy in the first group are compared with the Roentgen ray findings after injection of 20 c.c. of a 10 per cent. solution of collargol, demonstrating the great diagnostic value of the Roentgen rays, supplementing, confirming or first rendering positive the diagnosis. The findings are typical, they assert, and permit an exact anatomic orientation before the operation, reassuring alike to the examiner and the operator.

87. **Absorption with Ileus and Peritonitis.**—Enderlen and Hotz devote 110 pages to the details of their extensive experimental research on the conditions in regard to absorption in the various stages of ileus and peritonitis as well as in health.

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The conditions in regard to the circulation of blood in the region of the intestines apparently govern the essential functions of the small intestine, movement, absorption and secretion, the entire activity of the intestine depending systematically on the rapidity of the blood-current. Their research does not open up new routes for treatment of ileus and peritonitis, but it explains the clinical importance of some of the measures in vogue. Enterostomy, for instance, relieves the tension and distention; this permits the circulation to resume its normal course, and this in turn starts peristalsis and absorption unless irreparable lesions have been installed; at the same time the enterostomy relieves the intestine of the task of passing along its contents. The fatigued intestine is thus given a chance to recuperate in peace, and this is far better than to whip it up with drugs or paralyze it with opium. In case of peritonitis, peristalsis starts up after the intestine has been thus artificially emptied and the circulation allowed to proceed unhindered. An important lesson learned from this research is that no food should be given by the mouth in any form; the intestine should not be burdened with it nor the contents increased in bulk by stimulation of the digestive glands. Even water should be avoided. Proctoclysis is far preferable, fatiguing the patient much less than the vomiting after ingestion of fluid. Giving the saline solution by the rectum permits the organism to take up only and just what it needs. They advocate in conclusion the continuous infusion of a weak solution of epinephrin; besides its evident therapeutic benefit it is an index for the prognosis.

88. **The Leukocyte Count in Appendicitis.**—Schmidt does not ascribe much importance to the leukocyte count in appendicitis, and cites some cases to show its unreliability in the early stages of the disease. At the same time, the blood-count and especially the Arneth blood-curve may throw light on the prognosis. In conclusion he warns of the danger in giving castor-oil in appendicitis; in one such case a boy attending school in the morning in apparent health developed abdominal pain in the afternoon and was given castor-oil by the family physician. The next day he was brought to the clinic with diffuse purulent peritonitis from perforation of the gangrenous appendix. With sudden abdominal pain, castor-oil should not be given until organic disease has been presumptively excluded. On the other hand, when enteritis is diagnosed, castor-oil can be given with confidence. It comes then early enough, while if it is given too soon it may do great harm.

89. **Tardy Traumatic Hemorrhage in the Meninges.**—Meyer reports three cases which seem to show that with a subdural meningeal hemorrhage there is little or no tendency to paralysis at first, and hemiplegia develops only gradually. With cerebral hemorrhage, however, the paralysis has the character of hemiplegia from the start. In his first case the hemorrhage was on the opposite side of the skull from the point of the trauma, and symptoms from the hemorrhage were not apparent until five days after the accident, the clinical picture in the meanwhile being merely that of concussion of the brain. With symptoms of pressure on the brain without definite localizing signs, a hematoma from contrecoup, that is, on the opposite side of the skull, should be suspected. The interval was five weeks in the two other cases after the fall on the head before the symptoms of pressure on the brain developed. The patients were men of 42 and 57 and there had been unconsciousness for half an hour after the accident and considerable headache since, but the patients continued at work, one for three weeks when intense headache developed with other symptoms of pressure on the brain, and puncture of the brain confirmed the diagnosis of a hematoma. Necropsy two weeks after trephining revealed purulent meningitis. In the third case nothing was known at first of a trauma affecting the head, but the diagnosis of a tardy traumatic left meningeal hemorrhage was confirmed by puncture of the brain and by necropsy, the patient succumbing to postoperative hemorrhage after trephining. No vascular changes were evident in either of these cases, the trouble being pure, traumatic tardy apoplexy, without fracture of the skull. In differentiation, arteriosclerosis of the brain vessels was suspected at first but puncture of the brain cleared up the diagnosis and pointed the way to treatment. Lumbar puncture may reveal a hemorrhage but gives no information as to its source. In every obscure case puncture of the brain should be the routine procedure. If the result is negative after bilateral puncture, decompressive trephining should be the next step without delay.

Münchener medizinische Wochenschrift

November 14, LVIII, No. 45, pp. 2425-2480

90 Necessity for Uniform Time Limit in Tests for Hemoglobin. (Zur Ausführung der Hämoglobinbestimmung, unter Umwandlung des Hämoglobins in salzsaures Hämatin.) C. Stäubli.
91 *Fever After Intravenous Injections. (Ueber Fieber nach intravenösen Injektionen.) W. Heubner.
92 Purin Content of Various Foods. (Der Puringehalt von Nahrungsmitteln.) K. M. Vogel.
93 *Vaccine Therapy of Gonorrhea. (Die kausale Behandlung der akuten und chronischen Gonorrhoe des Mannes.) A. A. L. Menzer.
94 Research on Coagulating Power of Blood. (Beitrag zur Methodik der Bestimmung der Blutgerinnungsfähigkeit, nebst Mitteilungen über die Gerinnungsfähigkeit des Blutes während Schwangerschaft, Geburt und Wochenbett.) M. Neu and P. Kreis. (Bedeutung der Blutgerinnung für die Entstehung der Thrombose.) H. Küster.
95 Frequency of Tendency to Spontaneous Healing of Sinus Thrombosis. (Ueber Spontanheilungsvorgänge bei Sinusthrombose.) L. Haymann.
96 Optical Instruments with Adjustable Axis. (Optische Instrumente mit beweglicher Achse und Ihre Verwendung für die Gastroskopie.) M. Hoffmann.
97 Flat-Foot Insole. (Die Heidelberger Plattfusseinlage.) O. Vulpius.
98 Healed Abscess in Frontal Lobe. (Zur Chirurgie des Stirnhirnabszesses.) O. Butzengeiger.
99 Tardy Exanthem After Intravenous Injection of Salvarsan. W. Heuck.

91. **Fever After Intravenous Injections.**—Heubner's experimental research has apparently demonstrated that intravenous injection of any solid substance, even in the finest emulsion, sends up the temperature regularly without the necessity for any chemical action. He experimented with soft paraffin, with a melting point at 39 C., in the form of a fine 0.01 or 0.1 per cent. suspension in Ringer's solution.

93. **Vaccine Treatment of Gonorrhea.**—Menzer declares that the aim in treatment should be to favor, not suppress, the discharge. After an ordinary course of treatment the patient should be tested with gonococcus vaccine to learn if he is really cured. If not, he should be given the benefit of vaccine therapy, supplemented by dieting, copious drinking, local heat to reduce inflammation in the form of warm sitz baths, and, if necessary, massage of the prostate. He insists further on the necessity for keeping the patient in bed for two or three weeks at the onset of acute gonorrhea. When the men are up and about the trauma of exercise favors the spread of the infection. He is an army surgeon and his remarks apply especially to military circles. The gonococcus vaccine induces a focal reaction wherever there is a gonorrheal process, and this has a curative action on the gonococci enseconced there, but it is only an aid in treatment. It must not be relied on to destroy all the germs and ward off complications. He reports a number of cases which illustrate, he thinks, the advantages of commencing vaccine therapy at once, plus warm sitz baths, as the routine treatment of acute gonorrhea, the only way, he is convinced, in which the disease can be effectually eradicated. He insists that the ordinary methods of treatment need revision.

Wiener klinische Wochenschrift, Vienna

November 16, XXIV, No. 46, pp. 1587-1622

100 Surgery in the Medical Course. (Welche Ziele verfolgt der chirurgische Unterricht?) H. v. Haberer.
101 Viscosity of Human Milk. (Einige viskosimetrische Beobachtungen an der Milch des Menschen.) K. Basch.
102 Five Cases of Tapeworm in One Family. (Sechs Fälle von Taenia cucumerina beim Menschen.) J. Lins.

Zentralblatt für Chirurgie, Leipzig

November 18, XXXVIII, No. 46, pp. 1497-1528

103 *Recurrence of Gastric Ulcer After Gastro-Enterostomy. (Ueber Magengeschwürsrezidiv nach Gastroenterostomie.) F. Fink.

103. **Gastric Ulcer Recurring After Gastro-Enterostomy.**—In Finck's case all the symptoms of the ulcer on the lesser curvature subsided after a posterior gastro-enterostomy for two years, and the patient, a man of 43, felt perfectly well.

After two years symptoms returned suggesting recurrence of the former ulcer, and the gastro-enterostomy opening was found entirely grown up and the old ulcer flaring up anew. The gastro-enterostomy had evidently given the ulcer a chance to heal, and as it healed the pylorus became permeable once more. This permitted evacuation of the stomach by the normal route as the gastro-enterostomy opening gradually grew up. But restoration of normal conditions restored the old factors predisposing to ulceration and hence the ulcer flared up anew. Fink resected the segment of the lesser curvature involved in the ulceration and thus permanently cured the patient.

Zentralblatt für Gynäkologie, Leipsic

November 18, XXXV, No. 46, pp. 1585-1608

104 Physiology of Menstruation. (Protektive Wirkung der Keimdrüsen auf Brunst und Menstruation.) J. Halban. (Das zeitliche Verhalten von Ovulation und Menstruation.) L. Fraenkel.

105 *Antagonism Between Mammary Gland Functioning and Ovulation. (Nachtrag zu der Arbeit: Ein Fall von Galactorrhoea post combustionem, zugleich ein Beitrag zur Lehre des Antagonismus zweischen Brustdrüsenfunktion und Ovulation.) E. Vogt.

105. **Antagonism Between Functioning of Lacteal Glands and Ovaries.**—Vogt brings down to date a case history showing the antagonism between lactation and ovulation. His patient is a healthy woman who was severely burned in both breasts by explosion of an alcohol can. She had nursed her child only six weeks and had been menstruating regularly during the four months since. The burn of the third degree induced profuse secretion in both breasts, although the woman was not pregnant, and this secretion continued profuse during the fourteen months before the site of the burns had entirely healed over. There was no trace of menstruation during all this time. When the wound finally healed lactation ceased at once, and two days later the menses appeared at the proper date for the first time for thirteen months and menstruation has continued normally since. This case of cessation of menstruation during traumatic galoctorrhea and its recurrence as the galactorrhea was arrested, is peculiarly interesting on account of its occurring outside of pregnancy.

Zentralblatt für innere Medizin, Leipsic

November 18, XXXII, No. 46, pp. 1121-1144

106 Albumin Metabolism: Laws Regulating Elimination of Sugar in Diabetes. (Ueber den Eiweissumsatz und über die Gesetze der Zuckerausscheidung beim Diabetes gravis.) L. d'Amato.

Gazzetta degli Ospedali e delle Cliniche, Milan

November 12, XXXII, No. 136, pp. 1435-1450

107 Intravenous Medication to Date. (La medicazione per via endovenosa.) L. Fornaca.

Policlinico, Rome

November, XVIII, Medical Section No. 11, pp. 477-532

108 Fever-Inducing Property of Typhoid Anaphylatoxin. (Ricerche sulla funzione pirogena della anafilosina tifica e saggi di immunizzazione attiva contro la stessa.) A. Tadini.

109 *Pathologic Anatomy and Origin of Tetany in Children. (A proposito di un caso di tetania infantile.) A. Longo.

110 Experimental Research on Elimination by the Intestines. (Contributo allo studio della eliminazione intestinale.) G. Breccia.

111 Levulose Test of Liver Functioning in Malaria. (La funzionalita epatica nei malarici, saggiata col levulosio.) P. Pozzilli.

109. **Necropsy Findings in Tetany in an Infant.**—The infant in the case reported by Longo was not quite two years old, and the tetany was of a very severe type. It was not apparently modified in the least by an intercurrent varicella, typhoid and acute pulmonary tuberculosis. No influence on the tetany could be discerned from change of diet or administration of lime or parathyroid extract. The necropsy findings were entirely negative as far as explaining the tetany except possibly for intense chromatolysis of the grey matter of the zone of Rolando and cornua of the upper spinal cord.

Riforma Medica, Naples

November 13, XXVII, No. 46, pp. 1261-1288

112 The Hands of Basket Weavers. (Il lavoro e le mani dei costruttori de sporte di Marano.) L. Ferrannini.

113 Experimental Research on Effects of Lesions of the Vagus Below the Diaphragm. (Effetti delle lesioni sottodiaframmatiche del vago.) C. Marchetti.

Ugeskrift for Læger, Copenhagen

November 10, LXXIII, No. 46, pp. 1691-1724

114 *Entoptic Examination of the Eyes. (Entoptisk Undersøgelse af Keratitis.) K. K. K. Lundsgaard.

114. **Entoptic Examination of the Eyes.**—Lundsgaard gives a number of illustrations to show the entoptic findings in certain cases of keratitis and to urge general practitioners to apply this simple method of examination to detect small central foreign bodies or keratitis which otherwise might escape discovery. He places in front of the eye a strong convex lens, + 13 to + 20 D and has the patient look through this at the light of a candle about 18 feet (6 m.) away. The patient is then asked to describe or draw on a sheet of paper the outline of what he sees. By this means minute changes can often be detected and localized.

Books Received

Books received are acknowledged in this column and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

FORTPFLANZUNG: VERERBUNG: RASSENHYGIENE. Illustrierter Führer durch die Gruppe Rassenhygiene der Internationalen Hygiene-Ausstellung 1911 in Dresden. Herausgegeben von Prof. Dr. Max von Gruber und Dr. Ernst Rüdin. Second Edition. Paper. Price, 7 marks. Pp. 191, with 230 illustrations. Munich: Lehmanns, 1911.

THE MORTALITY OF ALCOHOL. A Statistical Approximation of the Deaths in the United States in Which Alcohol May Figure as a Causative or Contributory Factor. By Edward Bunnell Phelps, M.A., F.S.S. Cloth. Price, $2. New York: Thrift Publishing Co., 1911.

DIE RATIONELLE ERNÄHRUNGSWEISE. Praktische Winke über das Essen und den Nutzen oder Schaden der verschiedenen Nahrungsmittel. Von Dr. med. A. Lorand. Paper. Price, 4 marks. Pp. 388. Leipsic: Klinkhardt, 1911.

THE CONSERVATION OF VISION. An Essay on the Care of the Eyes. By Douglas C. McMurtrie. Paper. Pp. 43. New York: American Association for the Conservation of Vision, 25 West Thirty-Ninth Street, 1911.

REPORT, AUSTRALIAN INSTITUTE OF TROPICAL MEDICINE, FOR 1910. By Anton Breinl, M.D., Director of the Institute. The Commonwealth of Australia, Department of External Affairs, 1911. Paper. Pp. 46.

ANESTHESIA AND ANALGESIA. By J. D. Mortimer, M.B. (Lond.), F.R.C.S. (Eng.), Anesthetist, Royal Waterloo Hospital. Cloth. Price, $2. Pp. 276. London: University of London Press, 1911.

THE TRIUMPH OF AMERICAN MEDICINE IN THE CONSTRUCTION OF THE PANAMA CANAL. By J. Ewing Mears, M.D., LL.D. Cloth. Pp. 25. Philadelphia: William J. Dornan, 701 Arch Street, 1911.

MINOR SURGERY. By Leonard A. Bidwell, F.R.C.S., Surgeon to the West London Hospital. Cloth. Price, $2. Pp. 265, with 88 illustrations. London: University of London Press, 1911.

STATISCHE GELENKERKRANKUNGEN. Von Dr. Georg Preiser, Hamburg. Paper. Price, 10 marks. Pp. 278, with 272 illustrations. Stuttgart: Enke, 1911.

SIXTH ANNUAL REPORT, HOSPITAL OF THE WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, PHILADELPHIA. For the Year Ending May 31, 1910.

TWENTY-NINTH ANNUAL REPORT, ST. ELIZABETH HOME FOR INCURABLES AND CONVALESCENTS, BARRINGTON, R. I.

FIFTY-EIGHTH ANNUAL REPORT, PENNSYLVANIA TRAINING SCHOOL FOR FEEBLE-MINDED CHILDREN, ELWYN, 1909-10.

THE PHYSICIAN'S VISITING LIST FOR 1912. Leather. Price, $1.25. Philadelphia: P. Blakiston's Son & Co.

PREVENTION OF BLINDNESS. A Circular Letter. Bulletin 2, Russell Sage Foundation. Paper. Pp. 51. 1911.

FIFTEENTH ANNUAL REPORT, LONG ISLAND (N. Y.) STATE HOSPITAL. For the Year Ending Sept. 30, 1910.

EINUNDZWANZIGSTER JAHRES-BERICHT DES DEUTSCHEN PROTESTANTISCHEN ALTENHEIMS, LAWNDALE, PA.

THIRTY-SEVENTH ANNUAL REPORT, ODD FELLOWS' HOME OF PENNSYLVANIA, PHILADELPHIA. For 1910.

THIRTY-THIRD ANNUAL REPORT OF THE PRESBYTERIAN ORPHANAGE, PHILADELPHIA.

FORTIETH ANNUAL REPORT OF THE HOME FOR AGED WOMEN, ELIZABETH, N. J.

BIENNIAL REPORT (1909-1910), ORPHANS' HOME, CARSON CITY, NEVADA.

ANNUAL REPORT OF THE SURGEON-GENERAL, U. S. NAVY. Paper. Pp. 96.

SIXTEENTH ANNUAL REPORT, LYMAN AND INDUSTRIAL SCHOOLS.

THIRD ANNUAL REPORT, ELYRIA (OHIO) MEMORIAL HOSPITAL.

REPORT OF THE LOWELL (MASS.) GENERAL HOSPITAL.

REPORTS, MUHLENBERG HOSPITAL, PLAINFIELD, N. J.